ARL 72-0046
APRIL 1972

Aerospace Research Laboratories

SPECTRAL MATCHING FACTORS FOR PHOTOCATHODES, PHOSPHOR SCREENS, AND PHOTOGRAPHIC EMULSIONS IN IMAGE INTENSIFIER-RECORDERS USING NIGHT-SKY ILLUMINATION, AND RELATED PROBLEMS

RADAMES K. H. GEBEL
HERMANN J. SPIEGEL
HERMANN R. MESTWERDT
ROY R. HAYSLETT
SOLID STATE PHYSICS RESEARCH LABORATORY

PROJECT NO. 7885

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AIR FORCE: 30-5-72/300

UNCLASSIFIED
Security Classification

DOCUMENT CONTROL DATA - R & D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY (Corporate author) Solid State Physics Research Laboratory Aerospace Research Laboratories Wright-Patterson AFB, Ohio 45433	2a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED 2b. GROUP

3. REPORT TITLE
Spectral Matching Factors for Photocathodes, Phosphor Screens, and Photographic Emulsions in Image Intensifier-Recorders Using Night-sky Illumination, and Related Problems

4. DESCRIPTIVE NOTES (Type of report and inclusive dates)
Scientific. Final

5. AUTHOR(S) (First name, middle initial, last name)
Radames K. H. Gebel, Hermann J. Spiegel, Hermann R. Mestwerdt, and Roy R. Hayslett

6. REPORT DATE	7a. TOTAL NO. OF PAGES	7b. NO. OF REFS
APRIL 1972	319	12

8a. CONTRACT OR GRANT NO. In-House Research b. PROJECT NO. 7885-00-03 LS-1 c. DOD Element 61102F d. DoD Subelement 681301	9a. ORIGINATOR'S REPORT NUMBER(S) 9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report) ARL 72-0046

10 DISTRIBUTION STATEMENT

Approved for public release; distribution unlimited.

11 SUPPLEMENTARY NOTES	12. SPONSORING MILITARY ACTIVITY
TECH OTHER	Aerospace Research Laboratories (ARL/LS) Wright-Patterson AFB, Ohio 45433

13. ABSTRACT

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DD FORM 1 NOV 65 1473

UNCLASSIFIED
Security Classification

Security Classification

14 KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
Photocathodes						
Phosphor screens						
Night-sky radiation						
Matching of phosphor screens with film						
Matching of phosphor screens with photocathodes						
Matching of night-sky with photocathodes						
Image Intensifier Tubes						

Ia

☆U.S Government Printing Office: 1972 - 759-085/562

Security Classification

ARL 72-0046

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RADAMES K. H. GEBEL
*HERMANN J. SPIEGEL**
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Acknowledgement

This paper was accomplished under Project 7885 of the Aerospace Research Laboratories/LS (AFSC). The authors wish to express their gratitude to Mr. Donald C. Reynolds, Director of the Solid State Physics Research Laboratory (LS), for technical review. Acknowledgement is given to Mr. Bernhard H. Pieruschka for helpful suggestions and assistance in preparing the manuscript. The assistance of Mr. James C. Caslin for programming the IBM 1620 and 7094 computers, and of Major Daymond Helton, in programming the computer produced diagrams, is sincerely acknowledged. Appreciation is expressed to Mr. William R. Woody for useful discussions, to Mr. Henry A. Bost, Mr. George A. Schantz and Miss Paula Saidleman for graphical work.

Abstract

The purpose of this paper is to assess the performance of basic components of opto-electronic image recording systems using night-sky illumination. The analysis is concerned with the matching efficiency between night-sky illumination and photocathodes, between photocathodes and phosphor screens and between phosphor screens and photographic films. To preserve resolution, a cascaded opto-electronic system must employ stages with maximum gain so that a minimum number of stages is contained in the system since especially each phosphor screen contributes to the deterioration of resolution.

Spectral Matching Factors for Photocathodes, Phosphor Screens, and Photographic Emulsions in Image Intensifier-Recorders Using Night-sky Illumination, and Related Problems

Radames K. H. Gebel,
Hermann J. Spiegel*,
Hermann R. Mestwerdt,
and
Roy R. Hayslett

Aerospace Research Laboratories, Solid State Physics Laboratory,
Wright-Patterson Air Force Base, Ohio 45433

1. Introduction

The spectral matching problem between photocathodes and night-sky illumination is dealt with, and a comparison is made of the intrinsic performance of photocathodes and special infrared sensitive photographic emulsion, when subjected to the night-sky radiation. Further, the photographic recording of the electron image emanating from a photocathode is treated. In single stage intensifier-recorder arrangements the spectral matching problems to be considered are those between night-sky illumination and photocathode and between phosphor screen and photographic emulsion whereby in multistage arrangements, the additional problem of phosphor screen—photocathode matching arises. Phosphor screen and photocathode responses are spectrally tabulated and graphically represented and extensive assessments of different combinations and situations are performed by deriving the different pertinent weighting factors. Basic performance problems to be considered when comparing conventional intensifier tubes and the ones of the channeled amplifier type are discussed.

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2. Night-sky Irradiance

The recent improvements in red extended photocathodes and near IR emulsions lead to the logical demand for an assessment of the possible improvement in passive night observation especially since the spectral range extended into the near IR includes many bands which have very high peaks furnished by the night-sky on which emphasis is often placed. However, one should not overlook the fact that these bands are mostly of molecular origin and that they have a rather small width.[1] Hence, the total power represented by these spectra may not be too significant in respect to the remainder of the night-sky irradiation, which is caused by diffuse moonlight, scattered sunlight, background light from the universe, etc. Evidently the relative weight of these bands depends upon the time of the night and year, moonphase, etc. At full moon one should not expect any significant contribution to the detection limit from the molecular bands, since a moonless night-sky furnishes about 20 μfootcandles of illumination whereby full moon furnishes 2500 μfootcandles and the most significant band of the molecular spectra at 3% moonlight (measured with a 10 nm resolution spectrometer) is about 5 times higher than the nonmolecular spectra but has a bandwidth of less than 10 nm. These molecular spectral bands have been extensively analyzed[2], but comprehensive data about the composite night-sky irradiance formed by moonlight, molecular spectra and other sources seem to be scarce in the literature. This is understandable because the multitude of parameters involved when evaluating night-sky irradiance data is formidable and poses a frustrating task timewise.

Since the main purpose of this paper is a general assessment of the response of various photocathodes and the most suitable com-

mercially available near IR emulsion to night-sky radiation, it is not too important here to consider all the different parameters but rather, for the sake of simplicity, to justify a single typical illumination case. The idea of L. M. Bibermann and T. J. Celi[3], which consists in calculating spectral theoretical night-sky values by adding to the airglow a certain percentage of sunlight, modified by the albedo of the moon, is accepted here as suitable for such an assessment. Some of their basic data obtained in this manner, assumed to be sufficiently close to reality for practical purposes, has been used for the computation of Table 1. No effects of atmospheric conditions were considered. This table shows the composition of the selected night-sky irradiance data in quanta $sec^{-1}cm^{-2}$ for λ = 400 to 1090 nm and after having passed through Kodak Wratten filter 89b which effectively suppresses all radiation below 670 nm.

The flux density Q_N in quanta $sec^{-1}\ cm^{-2}$ corresponding to the power density P_N in $W\ cm^{-2}$ of monochromatic light is given by the well known relation

$$Q_N = \frac{P_N}{E_Q} = 5.034\times10^{24}\ \lambda P_N\ , \qquad (1)$$

where λ is the wavelength in meters and E_Q is the energy in joules of one quantum with the wavelength λ. The number of digits in the tables do not necessarily reflect the accuracy of the process, but are used for mathematical reasons to prevent undesired cumulative rounding off errors.

3. Photocathode-Night-sky Assessment

Figure 1 shows the spectral conversion factors η_{PC} in photoelectrons per quantum of some representative photocathodes used for the following night-sky assessment. The conversion factor η_{PC} is given by[4]

$$\eta_{PC} = 1.24\times10^{-6}\lambda^{-1}S_{PC}\ , \qquad (2)$$

where S_{PC} is the sensitivity of the photocathode in Amps per Watt incident radiation, as furnished by the respective manufacturers. The pertinent photocathode output currents $I_{PC,N}$ (no filter) and $I_{PC,N,T}$ (for filter 89b) in mA cm^{-2} applying to the number $Q_{N,(T)}$ of quanta sec^{-1} cm^{-2} falling within the selected spectral interval are given by[4]

$$I_{PC,N,(T)} = \frac{Q_{N,(T)}\eta^{\dagger}_{PC}}{6.24\times10^{15}} = 1.6022\times10^{-16}\, Q_{N,(T)}\eta^{\dagger}_{PC}$$
$$= 1.6022\times10^{-16}\, E_{PC,N,(T)} \quad , \tag{3}$$

where $\eta^{\dagger}_{PC}$ is the average photocathode conversion yield for the interval under consideration and $E_{PC,N,(T)}$ is the electron flux density in electrons sec^{-1} cm^{-2}, i.e.,

$$E_{PC,N,(T)} = 6.24\times10^{15} I_{PC,N,(T)} \tag{4}$$
$$= Q_{N,(T)}\eta^{\dagger}_{PC} .$$

$\eta^{\dagger}_{PC}$ may be obtained from the spectral conversion factor η_{PC} shown by Fig. 1 by forming the average value from the boundary values of the interval used.

Throughout this paper, the optional T is used to indicate if a Kodak filter 89b is used and the superscript † indicates the average value for the spectral interval under consideration. Tables 2a and 2b show the typical spectral sensitivity values $I_{PC,N,(T)}$ for the representative photocathodes shown by Fig. 1 in response to the night-sky irradiance.

The dark current of the different photocathodes is neglected for the assessments performed, because it is relatively easy to lower this dark current to practically zero by appropriate cooling. However, if the dark current cannot be neglected and if one deals with a constant scene background, the average number of electrons corresponding to the dark current may be added to the average number of photoelectrons caused by the background, as applicable to a pertinent resolution element.

For comparing the overall responses of the different photocathodes, the weighting factors given at the bottom of Tables 2a and 2b are referenced to the most efficient photocathode (Varo) by the state of the art. Thus, it can be seen that this photocathode, when subjected to the night-sky irradiation of Table 1, represents an improvement of about 20:1 in comparison to the S-1 which was already in use in WW II.

4 Infrared Sensitive Photographic Emulsion-Night-sky Assessment

If the spectral sensitivity S_L of a photographic emulsion is expressed in erg cm^{-2}, then the conversion efficiency η_L in grains-quantum^{-1} of the emulsion is given by[4,7]

$$\eta_L = 1.986305\times10^{-22}(10^{-D_F}-10^{-D})(\lambda S_L A_g^{\dagger})^{-1} = \frac{G_{N,(T)}}{Q_{N,(T)}} \quad , \qquad (5)$$

where $A_g^{\dagger} = \pi d_L^{\dagger 2}/4$ and is the average grain size in m^2, $d_L^{\dagger}$ is the average grain diameter in m, D is the total density and equals $D_\Delta + D_F$, D_Δ is the density as caused by the utile radiation, D_F is the fog density of the emulsion and $G_{N,(T)}$ is the useful grain rate density in grains sec^{-1} cm^{-2}. (Useful grains; not considering the grains constituted by the fog.) Using this equation for Kodak 5424 near IR emulsion (12 min development in D-19, 68° F) yielded Table 3, which shows the spectral sensitivity S_L and the spectral conversion factor η_L with D as parameter; Fig. 2 shows the latter. The Kodak emulsion 5424 was selected because it has the highest sensitivity of commercially available photographic emulsions in the near IR. The average projected grain area $A_g^{\dagger}$ of the 5424 emulsion is assumed to be 3.8×10^{-12} m^2.[4] Evidently, the values of Table 3 and Fig. 2 can only be considered as guiding values, since a different production run, tolerances in developing temperature and time, type and tolerance of developer and other obvious factors may produce considerable deviations in the quoted values. However, it is very useful to have such guiding values which may be considered as a sufficiently close average for practical purposes.

Assuming that the 5424 emulsion is directly exposed to the night-sky irradiation, and using Table 1 and Eq. (5), the grain rate-density $G_{N,\Delta(T)}$ in grains sec^{-1} cm^{-2} obtained in reference to a certain D_Δ can be found and are tabulated in Table 4. Thus, for example, for λ_1 to λ_2 = 400 to 900 nm, $G_{N,\Delta,0} \approx 2.8\times10^6$ grains sec^{-1} cm^{-2}. One should note here, that the meaning of $G_{N,\Delta,(T)}$ is not that the D_Δ, used for reference, is obtained in one second exposure but rather that the conversion efficiency η_L valid for the given D_Δ has been used. This formulation of $G_{N,\Delta,(T)}$ is necessary since η_L is a nonlinear function.

5. Photocathode-Photographic Emulsion Performance Comparison

Since the theoretical limit in detection is governed by probability, the final basic detection capability of a device depends on the efficiency of converting one kind of species into another, for example, quanta into electrons or grains, which in turn determines the minimum detectable spatial and temporal deviations between detection elements.[5] Under ideal conditions the percentage deviation in the number of converted species is governed by a Poisson distribution for small conversion yields. Therefore evidently, comparing the number of converted species for different devices (even if one device converts into electrons and the other directly into grains) is a measure of the ratio of the intrinsic detection capability of the assessed devices.[4]
Thus, photocathode performances may be assessed in comparison to that of photographic emulsions by forming the ratio between the number of primary photoelectrons $E_{PC,N,(T)}$ and the number of effective blackened grains $G_{N,\Delta,(T)}$ obtained. This ratio, which will be called the comparison factor $M_{PC,L}$, is given by[4]

$$M_{PC,L} = \frac{6.24\times10^{15} I_{PC,N,(T)}}{Q_{N,(T)}\eta_L} = \frac{E_{PC,N,(T)}}{G_{N,\Delta,(T)}} . \qquad (6)$$

By the state of the art in light amplification a single primary photo-electron may easily yield up to several hundred grains, as will be shown later. But, since it is the smallest number of species in a chain which determines the noise in the reproduced picture, i.e., here the number of primary converted species per resolution element and exposure time, clearly $M_{PC,L}$ is needed for reflecting the intrinsic capability ratio of different devices under comparison, not the number of species as obtained after the amplification process.[5]

Then, by using Eq. (6) and Tables 2 and 4 a numerical value of 250 is found for the comparison factor between the Varo photocathode and Kodak IR emulsion 5424 for the spectral interval of 400 to 1090 nm; when using Kodak Wratten filter 89b (670 to 1090 nm) the comparison factor is 214. Evidently, because of the upper cut-off of the spectral sensitivity of the 5424 emulsion and the Varo photocathode, radiation beyond 900 and 930 nm, respectively, is not effective. In Eq. (6) the same spectral distribution of the influx of light is assumed for both kinds of detectors and obviously the same theoretical signal-to-noise ratio is obtained if the exposure time for the photocathode is reduced by the numerical value of $M_{PC,L}$. When making photographic recordings from the screen of an intensifier tube, exposure time and intensifier gain have to be properly chosen, so that a suitable density is achieved on the film, whereby, an average density [illegible] 1 is desirable. On the other hard, the signal-to-noise ratio depends solely on the exposure time and the illumination of the primary photocathode, i.e. the number of photoelectrons released per resolution element during the selected exposure time. The pertinent parameters must be selected according to the lowest acceptable signal-to-noise ratio as determined by quantum mechanical consideration.

The inferior intrinsic resolution capability of image intensifiers in comparison to photographic emulsions is not very important in low light level work; due to quantum mechanical limitations, fairly large resolution element areas have to be accepted at low light levels. Conversely, in the case of direct photographic recording, the focal plane illumination determines the shortest permissible exposure time for obtaining the lowest acceptable density, yielding a proper contrast-resolution relationship.

6. Theoretical Consideration for Detection Parameters using Night-sky Irradiance

The practical application of the tables and previously derived equations can best be shown by presenting to the reader the following typical example. A scene is to be photographed using the night-sky irradiance, as listed in Table 1, as illuminating source. The optical system employed has an effective aperture diameter d_a of 0.2 m, a focal length f = 0.15 m (6 inches) and a transmission efficiency η_o = 0.75. Of interest is the exposure time necessary to obtain an effective density D_Δ = 0.3 and 1.0 above the fog density D_F for the spectral region of λ_1 to λ_2 = 400 nm to 1090 nm and 670 to 1090 nm (using Wratten filter 89b), when employing direct photographic recording with Kodak near IR emulsion 5424 (Table 3) and for a single stage intensifier and multi stage intensifier, fiber optically coupled (coupling efficiency η_{OF} = 0.5).

$G_{L,\Delta}$ in grains cm^{-2}, which represents the number of useful grains needed to accomplish D_Δ = 0.3 and 1.0, has to be determined first. In another paper an equation for $G_{L,\Delta}$ was derived.[6,7] Thus,

$$G_{L,\Delta} = (10^{-D_F} - 10^{-D}) \times A_g^{-1} \quad , \tag{7}$$

where A_g is the average grain area in cm^{-2}.

Whence, for $D_\Delta = 0.3$ for the above 5424 Kodak IR emulsion, values for

$$G_{L,0.3} = (10^{-0.07} - 10^{-(0.3+0.07)}) \times (3.8\times10^{-8})^{-1}$$

$$= 1.12\times10^{7} \text{ grains cm}^{-2} \qquad (8a)$$

and for $D_\Delta = 1.0$

$$G_{L,1.0} = (10^{-0.07} - 10^{-(1.0+0.07)}) \times (3.8\times10^{-8})^{-1}$$

$$= 2.01\times10^{7} \text{ grains cm}^{-2} \qquad (8b)$$

are found.

In order to obtain a density of D_Δ an exposure time $t_{L,\Delta}$ in seconds must be used which is given by

$$t_{L,\Delta} = \frac{G_{L,\Delta}}{G_{N,\Delta,(T)}} , \qquad (9)$$

where $G_{N,\Delta,(T)}$ is spectrally listed in Table 4.

Thus, here for λ_1 to λ_2 = 400 to 900 nm

$$t_{L,0.3} = \frac{G_{L,0.3}}{G_{N,0.3}} = \frac{1.12\times10^{7}}{3.73\times10^{6}} \approx 3 \text{ sec} \qquad (10a)$$

and

$$t_{L,1.0} = \frac{G_{L,1.0}}{G_{N,1.0}} = \frac{2.01\times10^{7}}{2.77\times10^{6}} \approx 7.3 \text{ sec.} \qquad (10b)$$

Further, for λ_1 to λ_2 = 670 to 900 nm, (Wratten filter 89b)

$$t_{L,0.3,T} = \frac{1.12\times10^{7}}{1.65\times10^{6}} \approx 6.8 \text{ sec} \qquad (10c)$$

and

$$t_{L,1.0,T} = \frac{2.01\times10^7}{1.22\times10^6} \approx 16.6 \text{ sec.} \tag{10d}$$

The foregoing values for exposure times are for direct exposure as assumed for Table 1 and, evidently, when using an optical system, the exposure time will have to be extended, since only a fraction of the number of quanta incident to an area A_s at the scene will reach the focal plane, as shown by Fig. 3.

Thus, as determined by optical geometry, which does not require considering focal length, the attenuation factor K_Q is given by

$$K_Q = \frac{Q_{SI}}{Q_{FC}} \approx 4\left(\frac{H}{d_a}\right)^2 \eta_{tot}^{-1} \tag{11}$$

where Q_{SI} is the quanta flux incident per unit area at the scene, Q_{FC} is the quanta flux effectively collected by the optical system from that unit area, d_a is the effective diameter of the optical system in meters, H is the distance in meters between the scene and the optical receiver,

$$\eta_{tot} = \eta_O \eta_G \eta_A, \tag{12}$$

η_O is the efficiency of the optical system, η_G is the reflectivity of the ground, and η_A is the transmittance of the medium through which recording is achieved; the factor 4 is used by assuming that Lambert's cosine law applies, which may be too optimistic in some cases.[8]

Because of the geometry of the optical system, the scene area A_s becomes a minified image in the focal plane, and the number of quanta effectively collected by the optical system from a relatively large area

are imaged on a relatively small area. However, no higher area brightness than the ground scene brightness will occur because of the attenuation factor K_Q. Thus, one finds for the effective exposure time

$$t_{L,\Delta,Im} = \frac{K_Q}{m_D^2} t_{L,\Delta} \quad , \tag{13}$$

where, from well known optical equations, the minification factor m_D is

$$m_D = \frac{r_s}{r_I} \approx \frac{H}{f} \quad , \tag{14}$$

r_s is the side length of a resolution element at the scene and r_I is the side length of a corresponding resolution element at the focal plane.

The effective aperture number F of an optical system is defined as

$$F = \frac{f}{d_a} \quad . \tag{15}$$

Using Eqs. (11), (13), (14), and (15) yields

$$t_{L,\Delta,Im} = 4F^2 \eta_{tot}^{-1} t_{L,\Delta} \quad , \tag{16}$$

where the $4F^2$ term is well known in optics, and in practice

$$4F^2 \ \eta_{tot}^{-1} = \frac{K_Q}{m_D^2} >> 1 \quad . \tag{17}$$

Using Eqs. (12) and (16) one finds for the optical system as in this example, by using Wratten filter 89b and Kodak emulsion 5424 and assuming $\eta_O = 0.75$, $\eta_G = 0.2$ and $\eta_A = 0.98$, i.e., $\eta_{tot} = 0.147$, that for obtaining a $D_\Delta = 0.3$ the necessary exposure time is

$$t_{L,0.3,Im} = 4 \times 0.75^2 \times \frac{1}{0.147} \times 6.8 \approx 104 \text{ sec,}$$

and for $D_\Delta = 1.0$,

$$t_{L,1.0,Im} = 4\times0.75^2\times\frac{1}{0.147}\times16.6 \approx 254 \text{ sec}.$$

If, for this example, a square object with a side-length r_{obj} of 4 meters has to be detected at a distance of 1,000 meters, the minification factor becomes, by using Eq (14) for a focal length f = 0.15 meters,

$$m_D = \frac{1000}{0.15} \approx 6667$$

and the image in the focal plane has a side-length r_{Im} of

$$r_{Im} = \frac{r_{obj}}{m_D}$$

$$= \frac{4}{6667} \approx 6\times10^{-4} \text{ meters}.$$

Thus the image of the object covers an area A_{Im} of 36×10^{-8} m^2, which is considerably larger than the average grain size of 38×10^{-13} m^2.

Since previously it was found that 2.02×10^5 grains mm^{-2} are needed for $G_{L,1.0}$, assuming a rectangular resolution element with a side-length r_R of 20 μm corresponding to a given 25 lp mm^{-1}, the number of grains $G_{L,R}$ for such a resolution element is

$$G_{L,R} = G_{L,\Delta}A_{Im}. \tag{18}$$

Thus, in this example,

$$G_{L,R} = 2.02\times10^5\times(20\times10^{-3})^2 \approx 81 \text{ grains}.$$

When the resolution capability of a photographic emulsion is quoted in line pairs mm^{-1}, this is determined by using a test pattern consisting of diminishing three-bar sets with a 100% contrast (ratio, 5:1 for single bars as

well as spacing, U.S. Air Force Standard, 1951). These bars cover many of the elemental areas referred to in this paper as resolution elements. The limit in resolution of photographic emulsions, etc., is usually judged by visual observation of the least discernable bar pattern, which means a contrast of about 2% since this is the limit in contrast detectivity of the human eye. The resolution element size in this article is not identical with the reciprocal of the resolution in line pairs mm^{-1} but is a selected elemental square area where the contrast limitations for this area are determined by statistics not involving the human eye. This concept of the discrete resolution element permits the use of strict mathematical procedures in contrast to the determination of resolution by subjective judgement using the three-bar pattern.

Because of unavoidable statistical fluctuations in light emission and reflection processes, conversion processes, etc.,[5] clearly the certainty by which an object against a background can be detected (detection probability) increases the more the scene target to background brightness ratio $K^{\#}_{obj,b}$ deviates from unity, where

$$K^{\#}_{obj,b} = \frac{G^{\#}_{L,obj}}{G^{\#}_{L,b}} \approx \frac{B_{obj}}{B_b} \tag{19}$$

and $G^{\#}_{L,obj}$ is the average number of grains for a resolution element in the focal plane exposed to the scene target and $G^{\#}_{L,b}$ is the average number of grains of adjacent resolution elements exposed to the background (fog grains should be added to $G^{\#}_{L,b}$), B_{obj} is the brightness of the target at the scene, and B_b is the

brightness of the scene background. The right side of the equation is approximated because of the nonlinear character of photographic emulsions. The minimum numerical value of $K^{\#}_{obj,b}$ required for detection is a function of the scene brightness B_s (ie, B_{obj} and B_b), the parameters of the optical system, etc., and is governed by statistical considerations.

The probability of detecting an object in the presence of a background has been extensively treated by one of the authors in another paper.[5] Generally, the detection probability depends on many parameters, such as the number of resolution elements covered by the object, the number of species within a resolution element covered by the object as well as within a resolution element exposed to background only, etc.; the interested reader must refer to the above reference. However, the above subject will be treated in a simplified manner by using the conversion noise multiple $R^{\#}_L$ which, in analogy to an electronic signal may be considered as the signal-to-noise ratio of the image information, and will be defined as

$$R^{\#}_L = \frac{G^{\#}_{L,obj} - G^{\#}_{L,b}}{\sigma_L} , \qquad (20)$$

where

$$\sigma_L = (G^{\#}_{L,obj} + G^{\#}_{L,b})^{1/2} \qquad (21)$$

and is the combined standard deviation of object and background (Poisson distribution) which may be considered as the noise. Further from Eqs. (19) and (20)

$$K^{\#}_{obj,b} = \frac{G^{\#}_{L,obj}}{G^{\#}_{L,obj} - R^{\#}_L \sigma_L} ; \qquad (22)$$

Then, obviously, in the above equations

$$G^{\#}_{L,obj} \neq G^{\#}_{L,b} \qquad (23)$$

and

$$K^{\#}_{obj,b} \neq 1. \qquad (24)$$

In this example, let $G^{\#}_{L,obj}$ = 81 grains as previously calculated from Eq. (18) and select $G^{\#}_{L,b}$ = 40 grains, then from Eqs. (21), (22), and (23)

$$\sigma_L = (81 + 40)^{\frac{1}{2}} = 11,$$

$$R^{\#}_L = \frac{81-40}{11} \approx 3.6$$

and

$$K^{\#}_{obj,b} = \frac{81}{40} \approx 2.$$

Of course, the previously quoted exposure times are prohibitive as far as motion is concerned. A passive imaging device which cuts these exposure times by at least a factor of 1,000 would be of interest. The resolution and other possible parameters for such a system will be investigated in the following paragraphs.

It will be assumed that, in the intensifier used, the amplification is sufficiently high to produce, from each photo-electron, many grains so that the statistics in the number of photo-electrons become the limiting factor.[5] Using Table 2b, one finds for the Varo photocathode, for λ_1 to λ_2 = 670 to 930 nm by employing a Wratten filter 89b, that $I_{PC,N,(T)}$ is 4.163×10^{-6} mA cm^{-2}; thus here, using Eq (4),

$$E_{PC,N,T} = 4.163\times10^{-8}\times6.24\times10^{15} \approx 2.6\times10^{8} \text{ electrons sec}^{-1}\text{ cm}^{-2}.$$

Hence, for the electron flux $E_{PC,Im}$ in electrons sec^{-1} cm^{-2} for a Varo type photocathode and the lens and situation under consideration,

$$E_{PC,Im} = \frac{E_{PC,N,(T)}}{4F^2\eta^{-1}_{tot}}, \qquad (25)$$

which is here

$$E_{PC,Im} = \frac{2.6\times10^{8}\times0.147}{4\times0.75^{2}} \approx 1.7\times10^{7} \text{ electrons sec}^{-1}\text{ cm}^{-2}$$

and reduces to 8.5×10^{6} electrons sec^{-1} cm^{-2}, when considering a fiber optical plate with 50% transmission efficiency.

Analogous to Eqs. (19) to (24) for the required minimum ratio $K^{\#}_{obj,b}$ of the number of electrons $E^{\#}_{PC,obj}$ of a resolution element exposed to the scene traget and the number of electrons $E^{\#}_{PC,b}$ of a resolution element exposed to the background needed for detection by a photocathode

$$K^{\#}_{obj,b} = \frac{E^{\#}_{PC,obj}}{E^{\#}_{PC,b}} = \frac{E^{\#}_{PC,obj}}{E^{\#}_{PC,obj} - R^{\#}_{PC}\,\sigma_{PC}} = \frac{B_{obj}}{B_b}, \tag{26}$$

where

$$\sigma_{PC} = (E^{\#}_{PC,obj} + E^{\#}_{PC,b})^{1/2} \tag{27}$$

and

$$R^{\#}_{PC} = \frac{E^{\#}_{PC,obj} - E^{\#}_{PC,b}}{\sigma_{PC}}, \tag{28}$$

$$E^{\#}_{PC,obj} \neq E^{\#}_{PC,b}, \tag{29}$$

$$K^{\#}_{obj,b} \neq 1 . \tag{30}$$

Assuming here also as before for $R^{\#}_{L}$, now for $R^{\#}_{PC} = 3.6$ and for $E_{PC,m}$ = 68 electrons sec^{-1} yielded by a resolution element with a side length of 20 μm for the numerical value of $E_{PC,Im}$ as shown to have the same

contrast situation here as in the previous film example, i.e., to obtain equal numerical values for σ and R, 81 photoelectrons have to be obtained from the target. Since

$$t_{PC} = \frac{E^{\#}_{PC}}{E^{\wedge}_{PC,Im}} \qquad (31)$$

an exposure time of

$$t_{PC} = \frac{81}{68} \approx 1.2 \text{ sec}$$

must be utilized, which is 254/1.2 =212 times shorter an exposure time than needed for the film. If dynamic events are to be followed within a tenth of a second (i.e., 10 fields per second), and the same values should be maintained for σ and R, consequently resolution must be sacrificed. Here in this example the 20 μm resolution element side length would have to be increased by a factor of $(t_{PC1}/t_{PC2})^{\frac{1}{2}} = (1.2/0.1)^{\frac{1}{2}} \approx 3.5$, i.e., the side length of the resolution element has to be 20×3.5 = 70 μm, so that the same parameters may be obtained with a field rate of 10 per second (assuming sufficient intensification, permitting kinescope recording of the image on a suitable film with a density of $D_{\Delta} = 1$).

Solving Eq. (6) for the effective conversion efficiency $\eta_{PC,N,(T)}$ of a photocathode to the night-sky yields

$$\eta_{PC,N,(T)} = \frac{E_{PC,N,(T)}}{Q_{N,(T)}}, \tag{32}$$

where $E_{PC,N,(T)}$ is from Table 2b and Eq. (4), and $Q_{N,(T)}$ is listed in Table 1. Here, for the Varo photocathode for λ_1 to λ_2 = 670 to 930 nm, by using Eq. (32) it is found that

$$\eta_{Varo,N,T} = \frac{2.6\times10^{8}}{5.2\times10^{9}} \approx 5\times10^{-2} \text{ electrons quantum}^{-1}.$$

Conversely, for the Kodak 5424 IR emulsion, for the same near IR interval, by using Eq. (5) it is found that

$$\eta_{5424,N,T} = \frac{1.22\times10^{6}}{5.2\times10^{9}} \approx 2.4\times10^{-4} \text{ grains quantum}^{-1}$$

which, by using Eq. (6), yields for the Varo photocathode in reference to the Kodak 5424 emulsion a superiority factor $M_{Varo,5424}$ of $5\times10^{-2}/2.4\times10^{-4} \approx 2\times10^{2}$.

The foregoing equations and example have shown the relationship of the pertinent detection parameters such as resolution, speed of detection, choice of detector, contrast detectivity, etc. Modification of the numerical values of the above parameters in the foregoing example for assessing the limit in passive night time detection for any specific situation and instrumentation is left to the reader.

7. Theoretical Considerations of Important Parameters for Image Intensifier-Photographic Emulsion Recorders

In order to reach the limitations in image recording as imposed by the spatial and temporal statistical variations occurring in the number of photo-electrons (conversion noise as explained in the previous section), sufficient amplification must be achieved by the imaging system. Usually, this cannot be achieved using a single stage but, clearly, cascading a suitable number of intensifiers should accomplish this. Conventional tubes, without fiber optics, may be cascaded with suitable lens coupling systems; but these are bulky and only a small fraction of the light can be focused from one stage to the next photocathode because of limiting apertures. Thus, fiber optics become mandatory for a practical device. However, one should realize that, if intensifier tubes which have fiber optical inputs and outputs are cascaded, resolution is impaired much beyond the intrinsic fiber resolution capability as determined by fiber diameter by the fact that no provision exists for exact geometrical alignment of the cores of one tube to those of the next. Further, this random positioning of the cladding of the fibers of one stage in respect to the cores of the next not only results in deterioration of the resolution but, by blocking off light, introduces a factor which depends on the number of stages and thus lowers the effective intensification factor of cascaded devices. If a single fiber optical plate has a contrast transfer function of 0.76 for 25 lp/mm,[9] then a three stage cascaded device, which obviously requires 6 fiber optical plates, has a combined contrast transfer function of only 0.193. Thus, if one tries to detect 25 lp/mm having a brightness difference of 10%, this difference will show up as less than 2% on the final screen, which is below the contrast detectivity of the human eye. Accomplishing the same job with two stages would render, for the same situation, 3.4%, which is a serious deterioration but at least can be detected by the human eye. There is little sense in considering the performance of an intensifier with 100% contrast input, as is often done with a test pattern, because in nature there are hardly ever scenes in the visible and IR which have a 100% contrast, rather these contrasts are usually in the 5 to 25% range. In reconnaisance, camouflage must

be considered, which usually results in values considerably less than 5%. Thus, controllable contrast enhancement should be employed in a more sophisticated system to achieve optimum performance. Also, the highest possible gain must be achieved with the smallest number of cascaded stages to assure the best possible transfer function of the total cascade.

Since resolution in low light level work is limited by quantum mechanical limitations, there must be a sufficient number of quanta for the selected resolution element area and exposure time. Therefore, making the diameter of the fibers smaller than needed may yield, for the resolution possible at low light levels, a worse transfer function for a low number of lp/mm than using a relatively large diameter fiber. Further, using fibers of smaller diameter may require a sacrifice of optical insulation between individual fibers, while the larger diameter fibers can be very well separated optically from the adjacent ones, preventing cross talk.

The following sections are concerned with optimization of the different parameters of intensifier tubes, so that a minimum of cascaded tubes can be used, maintaining resolution at its maximum. The essential parameters to be considered for optimizing an image intensifier tube, as treated in this paper, are: a) Proper spectral matching of the photocathode to the input light flux, which may be the night-sky and has been treated in the first section. b) Proper choice of phosphor screens in reference to the photocathode of the next cascaded image tube, assuring optimum in the number of photoelectrons leaving the cascaded photocathode per photoelectron impinging on the phosphor screen. c) Proper choice of phosphor screen in reference to available photographic emulsions, assuring optimum number of grains on the emulsion per photoelectron impinging on the phosphor screen. The problem under a) is treated in the first section of this paper by tabulating spectrally the night-sky and assuming the different photocathodes. To obtain information for b) and c), spectral tabulation of the different phosphor screens showing the number of quanta emitted when hit by a single electron has to be achieved first.

Manufacturers of phosphor screens usually furnish the characteristics of phosphor screens by expressing

"the spectral efficiencies η_p in watts of radiated light per one nanometer bandwidth per watt electrical input using electrons accelerated by 10 kV (10 kV electrons) which impinge on the phosphor screen".[6] (33)

Normally, the data quoted is for aluminized phosphor screens, with which type this paper is solely concerned. The characteristics of the phosphor screens used in this paper are shown in Fig. 4. One must realize that the quoted spectral efficiencies are valid only for that thickness used by the manufacturer when the measurements were made. Unfortunately the phosphor screen thickness at which the data are taken, are usually not given by the manufacurer; each manufacturer uses a thickness which allows him to stay within the specifications as established by the industry.

Converting this efficiency coefficient into an electron-to-quanta conversion factor η_p^* yields more useful data for practical applications and the following derivations will be concerned with this matter. Since the quoted η_p uses as power input 1 watt and an electron acceleration of 10 kV, the current I_{inp} associated with it is

$$I_{inp} = \frac{1W}{10^4 V} = 10^{-4} A \; . \tag{34}$$

This current constitutes a number of electrons e_p hitting the phosphor screen, which is

$$e_p = 10^{-4} \times 6.24\times10^{18} = 6.24\times10^{14} \text{ electrons sec}^{-1}. \tag{35}$$

Since the dimension watt may be replaced by joules sec^{-1}, η_p may be converted into η_p^* in joules per 10 kV electron by equating

$$\eta_p^* = \frac{\eta_p}{e_p} = 1.6\times10^{-14} \; \eta_p . \tag{36}$$

Further, since the energy E_Q of 1 quantum is given by the well known equation

$$E_Q = (hc)/\lambda, \tag{37}$$

where $hc = 1.99\times10^{-25}$ J m, and η_p^* may be converted into $\eta_{p,q}^*$ expressing the number of quanta emitted per 10 kV electrons occurring for a bandwidth of λ_Δ.

Thus,

$$\eta_{p,q}^* = \eta_p^\dagger \frac{\lambda_\Delta}{6.24\times10^{14}(hc)} \quad . \tag{38}$$

If the acceleration voltage is not 10 kV, the tables may be modified for any voltage by multiplying η_p^* or $\eta_{p,q}^*$ with the correction factor k_c, where

$$k_c \approx \left(\frac{V_{acc}^* - V_d}{10 - V_d}\right)^\varepsilon \quad . \tag{39}$$

V_{acc}^* is the acceleration voltage used in kV and V_d is the so-called "dead voltage" in kV (usually $\approx$2kV) which must be expended to penetrate the aluminum layer on top of the phosphor screen. The aluminum layer is needed for prevention of light feedback and also increases the efficiency by reflection in the desired direction. The exponent ε has a value which depends upon the thickness d_p of the phosphor layer and its grain size, the band structure of the phosphor, the acceleration voltage, etc. This factor must be determined experimentally and varies from phosphor screen to phosphor screen and also from manufacturer to manufacturer. At lower voltages for many phosphor screens, k_c usually changes quadratically when varying the effective voltage, at higher voltages the change of k_c may become linear and gradually reduces to a plateau beyond which k_c may even decrease again. Since the penetration depth of electrons depends upon the voltage by which they are accelerated, the phosphor

screen must be given an appropriate thickness for the utilized V^*_{acc} in order to achieve optimum efficiency. The penetration depth of accelerated electrons for different phosphors has been treated by several authors.[9,10,11] If maximum resolution is required, thin phosphor screens may be needed ($\sim 2\mu m$). But for higher acceleration voltages, sufficient absorption of the high energy electrons may not occur, resulting in an impaired phosphor screen efficiency. If the screen is too thick reabsorption may occur and only a fraction of the light produced may be emitted by the surface of the screen. For many medium-thick and thicker phosphor screens, values for ε of 1.4 to 2 are usually observed;[9] conversely for many thin phosphor screens ε may approach unity.

The phosphor screen correction factor k_c of Eq. (39), i.e. the variation in light output from a phosphor screen as a function of the applied acceleration voltage V^*_{acc}, does not represent the intrinsic variation in energy conversion of the phosphor material used for the screen. In a homogeneous phosphor the electron beam intensity as a function of the depth of penetration ρ should be exponential. The depth of penetration where the intensity is reduced to 1/e is called ρ_p by definition. Within the voltage range as used for cathode ray and intensifier tubes, ρ_p varies nearly quadratically with the effective acceleration voltage V_{eff}, where

$$V_{eff} \approx V^*_{acc} - V_d. \qquad (40)$$

Letting

$$\delta = \frac{\rho_{p2}}{\rho_{p1}} , \qquad (41)$$

i.e., be the ratio in the penetration depth involving the voltages V_{eff2} and V_{eff1} respectively of a phosphor screen with a normalized thickness θ, where

$$\theta = \frac{\rho_{pa}}{\rho_{pl}} \tag{42}$$

and ρ_{pa} is the actual thickness, then the normalized energy absorptions η_{E1} and η_{E2} are given by

$$\eta_{E1} = \int_{0}^{n=\theta} e^{-n}\, dn = (1-e^{-\theta}) \tag{43}$$

and

$$\eta_{E2} = \int_{0}^{n=\theta/\delta} e^{-n}\, dn = (1-e^{-\theta/\delta}) \; . \tag{44}$$

Letting L_2/L_1 be the ratio in light output from the phosphor screen which is measured when changing from V_{eff2} to V_{eff1}, then the following conditions are valid

$$\frac{L_2}{L_1} = \frac{k_p \eta_{E2}}{\eta_{E1}} \tag{45}$$

where k_p is the ratio of the energy conversion between V_{eff2} and V_{eff1}. Equation (45) may be solved for k_p and the intrinsic voltage gain exponent ϵ_p may be found by using Eq. (39) by substituting ϵ with ϵ_p and k_c with k_p, thus

$$\left[\frac{V^{*}_{acc2} - V_d}{V^{*}_{acc1} - V_d}\right]^{\epsilon_p} = k_p \; , \tag{46}$$

which solves for

$$\epsilon_p = \frac{\ell g\; k_p}{\ell g \left[\frac{V^{*}_{acc2} - V_d}{V^{*}_{acc1} - V_d}\right]} \; . \tag{47}$$

Assume a phosphor screen with $V_d = 2kV$, $\theta = 1$ for $V^*_{accl} = 12$ kV, changing V^*_{acc} to 17 kV yields a ratio L_2/L_1 of 1.5 (measured). Then, from Eq.(45) and using for δ a value of 1.7 (experimentally determined by M. v. Ardenne)[12]

$$k_p = \frac{1.5(1-e^{-1})}{1-e^{-1/1.7}} \approx \frac{1.5\times0.632}{0.445} \approx 2.13$$

and from Eq (47)

$$\epsilon_p = \frac{\ell g\ 2.13}{\ell g\ 1.5} \approx 1.86 \ ,$$

which means that, if the phosphor could be made sufficiently thick so that nearly all the energy is absorbed, not just 44.5%, at $V^*_{acc} = 17$ kV and assuming that all the light produced is emitted, then the ratio of L_2/L_1 would be, for the voltages involved in this example,

$$\frac{L_2}{L_1} = \left(\frac{V_{eff2}}{V_{eff1}}\right)^{\epsilon_p} = 1.5^{1.86} \approx 2.1 \ .$$

Tables 10A to 10H show $\eta^{\dagger}_{P}$, $\eta^{*\dagger}_{P}$, and $\eta^{*\dagger}_{P,q}$ for spectral intervals of 10 nm and their summations for the most significant phosphors used in intensifier tubes. Tables 11A to 11L show the conversion efficiencies of the representative photocathodes considered for this paper, where η_{PC} is in electrons per quantum and is given by Eq.(2). Summing up the efficiency for the different spectral intervals and dividing by the number of intervals used yields the efficiency $\eta_{PC,White}$, i.e., the efficiency response such a photocathode would have to a so-called white quantum radiator, that is, a radiator for which

$$\frac{dE_{q,\lambda}}{d\lambda} = 0 \ , \tag{48}$$

where $E_{q,\lambda}$ is the spectral quantum emittance of the radiator. Tables 11A to 11L also show the reciprocal spectral values of η, i.e., κ_{PC} in quanta per electron,

which is useful for some calculations. Since the representative phosphor screens under consideration for intensifier tubes do not have any significant spectral emission characteristic beyond 700 μm,[15] clearly, one could not expect optimum performance for kinescope recording by using the Kodak 5424 emulsion, especially since this emulsion has a considerable reduction in sensitivity around 520 μm where phosphor screens have their peak emission. Only two representative photographic emulsions were analyzed since they are of suitable sensitivity and since only for these was the spectral information available within the boundaries of 200 to 700 μm;[15] for most other emulsions no data were available below 400 μm, even for those which actually are sensitive below this wavelength. Using such limited data would have resulted in an incorrect comparison. If filtering of light of a wavelength shorter than ≈300 to 400 μm occurs because of the type of glass used for the lens, etc., an error is introduced if this is not considered. However, for such situations the interested reader may derive the correct comparison factors by taking advantage of the fine-step tabulation of the intrinsic data of the paper and calculate, by combining the filter effects, the combined effective characteristics. The lower wavelength cut-off may have to be considered. Photocathode responses are usually the combined effect of the photocathode and glass substrate. If deposition is made on a fiber optic plate, the response also may differ from the standardized one, however, such effects are not considered in this paper. The graphical representations of the functions used for deriving the respective tables of the paper allow the reader to easily judge visually how much of the area under the respective efficiency curves, etc., is lost, i.e., by what amount a factor might be reduced by any optical filtering applied to any of the elements.

For color printing, color television and similar work, it is often very useful

to equalize the peak of different detectors by gray filters, i.e., it is useful to have tables where all peak values of the different phosphor screens are normalized to 1; then, the spectral interval expresses the fraction in reference to the peak value, and a separate table lists all the normalizing factors, so that one can determine immediately what gray filter has to be used for equalizing. Tables 12 to 15C show the normalized average efficiency values $\xi^{\dagger}$ and Table 16 shows the normalization factors N_F. Tables 17A to 17J show the spectral efficiency of phosphor screen-photographic emulsion combinations $\eta^{\dagger}_{P,L}$ in grains per 10 kV electron, where

$$\eta^{\dagger}_{P,L} = \eta^{*}_{P,q}\eta^{\dagger}_{L} \quad . \qquad (49)$$

The summation $\eta^{\dagger}_{P,L\Sigma}$ of the above spectral values are shown again by Table 26. Tables 18A to 25C show the spectral efficiency of phosphor screen-photocathode combinations $\eta^{\dagger}_{P,PC}$ in photoelectrons emitted per electron hitting the phosphor, where

$$\eta^{\dagger}_{P,PC} = \eta^{*\dagger}_{P,q}\eta^{\dagger}_{PC} \quad . \qquad (50)$$

The summations $\eta_{P,PC,\Sigma}$ of the above spectral values are shown by Tables 27A to 27C. The functions used for deriving the previously tabulated spectral values are shown graphically (computer plotted) by Fig. 5 to 21C.

The responses for combinations using gallium arsenide (GaAs) and the P-22R phospor screen are only of theoretical value. When assessing the materials for this paper no GaAs photocathodes for imaging were commercially available. The spectral response characteristic of the P-22R phospor screen represents only the spectral line envelope of average values; the intensity and distribution of the lines forming the envelope may differ considerably from manufacturer to manufacturer. Thus, the tabulated numerical values for the GaAs and the P-22R phosphor screens represent a goal rather than the state of the art. The phosphor screen-photocathode combinations using the S-17 and the S-20 interference photocathodes are also only of theoretical value since in these photocathodes the optical and electronic images occur on the same side. However, since future transparent photocathodes, that could be usable, may have such a response, these combinations were also plotted.

The previous example will now be continued by using the derived tables. As can be seen from Table 17B the most efficient phosphor screen-photographic emulsion combination is, by the state-of-the-art, P-11 and Royal-X Pan, which yields an $\eta^{\dagger}_{P,L\Sigma}$ of 1.3 grains per photoelectron for a photographic emulsion sensitivity as at a point on the H and D curve where $D_{\Delta} \approx 1$. If a single stage device is considered with an acceleration of 10kV, then using Eq (39) would effectively yield an $\eta_{P,L\Sigma,eff}$ of 0.65 grains per photoelectron, assuming 50% fiter optical coupling. In the previous example it was found that $E_{PC,Im}$ was about 1.7×10^{7} electrons sec^{-1} cm^{-2} emitted by the photocathode for the assumed situation which reduces to $E_{PC,Im,eff}$ of about 0.85×10^{7} electrons sec^{-1} cm^{-2},

assuming here also a 50% fiber optical input coupling. This would yield for the (P-11)-(Royal-X Pan) fiber optical coupled combination a total of $G_{N,L} = 5.53\times10^{6}$ grains $\sec^{-1}$ cm^{-2}. For a density of $D_{\Delta} = 1$, the number of grains cm^{-2} $G_{L,\Delta}$ needed for Royal-X pan (D-19, 12 minutes development, $A_g = 3.8\times10^{-12}$ m^2, $D_F = 0.15$) is, using Eq (7),

$$G_{RX,\Delta} = (10^{-0.15}-10^{-1.15})\times(3.8\times10^{-8})^{-1} \approx 1.68\times10^{7} \text{ grains cm}^{-2}.$$

Hence, the necessary exposure time is

$$t_{PC} = \frac{G_{L,\Delta}}{E_{PC,Im}\eta} = \frac{G_{L,\Delta}}{G_{N,L}} \quad , \tag{51}$$

which here is

$$t_{PC} = \frac{G_{RX,\Delta}}{G_{N,L}} = \frac{1.58\times10^{7}}{5.53\times10^{6}} \approx 3.04 \text{ sec} .$$

However, this is 2.5 times longer than the 1.2 seconds exposure time needed to satisfy statistical considerations for the selected resolution. If the itensifier tube accelerating voltage can be increased sufficiently, then the exposure time may be reduced to 1.2 seconds, but building stable tubes in the 15 to 25kV range is a very delicate job. Therefore, it may be advantageous to use a two stage intensifier.

In this paper, the intensifier gain K_{IG} is defined as the number of quanta emitted by the phosphor screen per quantum incident to the fiber optic plate used as substrate for the photocathode. Thus, for a single stage intensifier,

$$K_{IG1} = \eta_{FO}\eta_{PC,Im}\eta^{i}_{P,PC\Sigma}\eta_{FO} = \eta^{2}_{FO}\eta_{PC,Im}\eta_{P,PC,\Sigma} \quad , \tag{52}$$

which is, when using a Varo-type photocathode, P-11 phosphor, fiber optical

input and output windows with 50% transmission efficiency, night-sky radiation and 10 kV acceleration

$$K_{IG1,Varo} = (0.5\times5\times10^{-2})\times(808\times0.5)\approx 10.1 .$$

Intermediate stages will yield higher gains, because the radiation produced by the phosphor screen of the previous stage can be better matched spectrally than the night-sky can be matched with any photocathode.

It was found from the available data that a very efficient phosphor screen-photocathode sandwich which can be fabricated by most companies is a (P-11)-(S-20), yielding an $\eta_{P,PC,\Sigma}$ of 123 photoelectrons per electron impinging on the phosphor screen. However, this value is achieved only when employing a very thin substrate between the phosphor and photocathode; when cascading two separate tubes with fiber optical input and output windows the attenuation of the two fiber optical plates between phosphor and photocathode must be considered which yields

$\eta_{P,PC,\Sigma eff} = \eta_{P,PC,\Sigma}\eta_{FO} = 123\times0.5^2\approx 31$ photoelectrons per 10 kV electron impinging on the phosphor screen, when assuming 50% transmission efficiency of the fiber optics. This effective gain $\eta_{P,PC,\Sigma eff} = 31$ is much more than needed in the above example and the exposure time would have to be reduced to $t_{PC}/\eta_{IG} = 3.04/31\approx 0.1$ sec. If a three-stage intensifier arrangement as shown by Fig. 22 is used, then the exposure time reduces to $0.1/31 = 3.2\times10^{-3}$ sec.

In the following, it will be shown that the amplification provided by three stages may be too high to be effectively used for making high resolution, low noise recordings at medium light levels when normal frame rates are permissible. For a resolution element size with a side length of 20μm (Area $A_R = 4\times10^{-6}$ cm^2), the necessary number of grains $G_{L,R} = G_{L,\Delta}A_R$ is $1.68\times10^7\times4\times10^{-6} = 67$ for $D_\Delta = 1$; hence, for 50% fiber optical coupling efficiency, $67/(1.3\times0.5)\approx103$ 10kV electrons must impinge on the last intensifier screen. However, the effective gain in two stage and three stage tubes is 31 and $31^2 = 961$, respectively. Thus, $103/31\approx3.3$ and $103/961\approx0.1$ electrons respectively are needed to be emitted by the primary photocathode to achieve the required density of one. Obviously, since fractional electrons are not possible and by the ratio of statistics the previously assumed small resolution element size will no longer be possible, and using resolution elements having a larger area becomes mandatory. This means, for the three stage system in our example, that the 81 photoelectrons (lowest permissible number for statistical reason) must be spread over an area where the number of produced grains (i.e., for the three stage tube $G_L = E^{\#}_{PC}\,K^2_{IG}\,\eta_{P,L,\Sigma,eff} = 81\times31^2\times0.65\approx5.06\times10^4$ grains) will produce a density of $D_\Delta=1$. The required area is then $A_R = G_L/G_{L,\Delta} = 5.06\times10^4/1.68\times10^7 = 3.01\times10^{-3}$ cm^2 which is a square element with a side length of $\approx$ 550μm. Obviously, this is rather large for normal terrestrial purposes; however, a side length of that order may be of interest in astronomical observation systems using a telescope with a focal length of 10 meters or more, where the air scintillation limits the performance. These scintillations may cause angular displacements of the image of a point source of 0.5 sec of

arc or even as much as 20 sec of arc, which causes relatively large star images because of the long focal length. The noise which shows up in the pictures taken with an excessively high gain intensifier arrangement is not caused by tube noise but is due to the exposure time for $D_\Delta = 1$ becoming relatively short and thus the effective number of photoelectrons at the primary photocathode becomes too few to give a noiseless picture and allow a useful resolution also. The visual appearance of the statistical fluctuations in the recorded picture occurring when the number of photoelectrons per resolution element is reduced, but where the effective intensification is increased to yield in all cases a density of about 1 (intrinsic resolution maintained), is demonstrated by Fig. 23.

Clearly, if for the above given situation, a density $D_\Delta = 1$ is required for photographing the target, then the permissible exposure time becomes a function of the intensification factor K_{IG}, and thus, because of the statistical implications, resolution decreases with increasing the amplification, since with increasing the latter, with a lower and lower number of primary photo-

trons the same density is achieved. But the lower and lower number requires a larger and larger brightness difference between the target and background. Therefore, in a system suited for a wide range of light levels the adaptation to the different brightness levels should not be done by reducing the light flux with an aperture in front of the first photocathode, but rather by changing the amplification factor. This may be done, for example, by controlling the acceleration voltage. Then, the highest available number of primary photoelectrons is utilized for the maximum available exposure time which then yields the smallest possible resolution element within the intrinsic capability of the system.

The above clearly demonstrates the need for amplification control in high gain intensifier arrangements to match the given situation. However, since intensifier stages with fiber optical input and output plates can be purchased individually and any cascade arrangement can be made by the user, obviously, an arrangement may be used which permits changing the number of intensifiers. However, this is not a very convenient solution and may be of interest in laboratory applications but not for practical purposes as in reconnaisance where changes in the light level may occur every few minutes.

Controlling the amplification in an image intensifier without affecting the size, geometry or quality of focus in the reproduced image is not an easy task. Changing the acceleration voltage in an intensifier will affect the amplification, but in some designs may affect the above mentioned parameters also.

The electron multiplication factor of the channeled amplifier depends also on the voltage gradient along the channels and a resolution spot is well defined by the channeled structure and not affected by the voltage gradient, as may be the case with the conventional amplifier. Thus, changing the voltage over the micro-channel amplifier allows changing of the intensification factor without affecting the image position, etc. Hence, optimization between gain factor needed for the pertinent different light levels and possible resolution for the longest permissible exposure time may be achieved by using in an appropriate arrangement and manner a micro-channel amplifier.

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T A B L E S

and

G R A P H S

TABLE 1.

NIGHT-SKY ILLUMINATION, $Q_{N,thr,(T)}$, (TYPICAL AIRGLOW + 3% MOONLIGHT) ASSUMING CLOUDLESS SKY AND AIRMASS ∿ 2.

SPECTRAL INTERVAL Λ_i λ_1 to λ_2 $\lambda\ [\times 10^{-9} m]$		NO FILTER $Q_{N,thr}$ $\left[\frac{10^9\ \text{Quanta}}{\text{s cm}^2}\right]$	FILTER 89b $Q_{N,thr,T}$ $\left[\frac{10^9\ \text{Quanta}}{\text{s cm}^2}\right]$
400	410	0.037	
410	420	0.046	
420	430	0.053	
430	440	0.060	
440	450	0.069	
450	460	0.078	
460	470	0.089	
470	480	0.099	
480	490	0.109	
490	500	0.118	
500	510	0.124	
510	520	0.130	
520	530	0.135	
530	540	0.141	
540	550	0.149	
550	560	0.154	
560	570	0.157	
570	580	0.174	
580	590	0.179	
590	600	0.173	
600	610	0.179	
610	620	0.189	
620	630	0.211	
630	640	0.217	
640	650	0.221	
650	660	0.231	
660	670	0.221	
670	680	0.265	0.0001
680	690	0.262	0.0022
690	700	0.217	0.0139
700	710	0.277	0.0604
710	720	0.259	0.1166
720	730	0.241	0.1526
730	740	0.266	0.1954
740	750	0.203	0.1627
750	760	0.175	0.1470
760	770	0.270	0.2306
770	780	0.312	0.2702
780	790	0.269	0.2347
790	800	0.232	0.2041
800	810	0.203	0.1788
810	820	0.225	0.1990
820	830	0.241	0.2137
830	840	0.244	0.2168
840	850	0.242	0.2153
850	860	0.241	0.2153
860	870	0.697	0.6236
870	880	0.670	0.6006
880	890	0.169	0.1521
890	900	0.144	0.1297
900	910	0.118	0.1067
910	920	0.092	0.0831
920	930	0.484	0.4371
930	940	0.518	0.4678
940	950	0.162	0.1463
950	960	0.208	0.1881
960	970	0.229	0.2079
970	980	0.628	0.5702
980	990	0.635	0.5767
990	1000	0.236	0.2150
1000	1010	0.235	0.2138
1010	1020	0.231	0.2105
1020	1030	1.641	1.4974
1030	1040	1.653	1.5099
1040	1050	0.221	0.2021
1050	1060	0.217	0.1984
1060	1070	0.214	0.1966
1070	1080	0.844	0.7746
1080	1090	0.830	0.7626
400	1090	19.464	
670	1090	15.719	13.100

TABLE 2a.

TYPICAL SENSITIVITY VALUES, $I_{PC,N}$, OF PHOTOCATHODES IN RESPONSE TO NIGHT-SKY ILLUMINATION.

SPECTRAL INTERVAL Δ_i λ_1 to λ_2		PHOTOCATHODE TYPES: STANDARD (a)		TELE-FUNKEN (b)	INTER-FERENCE (c)	VARIAN 80/40 INTENS (d)	EMR (e)	EMR (e)	ITT (f)	HEIMANN (h)	TELE-FUNKEN (b)	VARO 25mm INTENS (g)
		S-1	S-20	S-20R	S-20		E-01	R-01	S-25	S-25H2	S-25T2	
λ [$\times10^{-9}$m]		$I_{pc,n}$ [10^{-11} mA/cm^2]										
400	410	2	115	115	74	48	139	146	75			9
410	420	1	144	144	110	64	171	179	95			15
420	430	1	163	163	150	77	191	201	108		116	22
430	440	1	179	179	204	89	208	222	120	25	136	31
440	450	1	195	195	277	99	226	245	133	35	164	44
450	460	1	211	211	343	107	246	271	144	47	196	61
460	470	1	227	227	387	117	274	302	158	64	235	83
470	480	1	238	238	427	125	294	326	171	79	271	104
480	490	2	250	250	396	132	308	341	181	94	307	123
490	500	2	256	256	285	134	317	348	186	109	336	143
500	510	2	253	261	141	135	317	352	187	121	355	161
510	520	2	248	265	55	134	316	358	188	130	371	175
520	530	3	244	261	27	132	314	357	190	137	378	189
530	540	3	239	256	19	130	310	350	191	146	381	201
540	550	3	236	252	20	131	310	352	193	155	384	214
550	560	4	229	242	30	128	296	345	190	160	375	222
560	570	4	220	234	49	123	282	326	187	164	359	224
570	580	5	228	246	76	129	299	336	199	183	377	247
580	590	6	215	234	95	125	286	325	196	190	365	253
590	600	6	192	207	108	115	255	290	182	186	326	243
600	610	6	186	202	179	114	250	279	180	193	315	251
610	620	7	183	201	154	113	246	280	181	204	313	264
620	630	8	180	200	189	119	253	296	191	228	325	294
630	640	9	176	190	212	116	234	282	187	234	307	300
640	650	10	163	185	234	111	213	265	181	239	289	304
650	660	11	154	175	260	110	195	254	182	249	280	316
660	670	11	131	156	262	99	160	217	166	238	251	301
670	680	13	139	177	327	103	169	237	191	283	280	380
680	690	14	122	159	338	106	146	214	176	278	259	355
690	700	12	88	117	288	82	107	156	136	228	202	294
700	710	15	96	136	370	99	124	177	163	289	244	378
710	720	14	78	115	342	88	103	149	144	267	218	356
720	730	14	61	94	306	77	80	123	125	245	193	330
730	740	16	55	91	316	80	76	119	131	266	202	360
740	750	12	34	62	216	56	52	79	94	197	145	270
750	760	10	23	48	163	46	39	60	75	162	148	230
760	770	16	28	65	213	66	52	82	108	240	174	346
770	780	19	24	66	196	71	52	82	116	262	190	388
780	790	16	15	49	125	57	39	58	91	211	153	326
790	800	14	9	36	81	44	28	39	69	171	125	276
800	810	12		27		35	21	24	53	141	102	237
810	820	13		24		34	20	18	54	146	105	256
820	830	13		20		31	20	14	52	145	102	262
830	840	13		16		26	18	10	46	133	91	247
840	850	13		12		20	15	6	40	114	70	221
850	860	13		8		15	13	4	34	94	46	182
860	870	36		16		32	32		88	217	79	364
870	880	33		9		21	24		72	161	[illegible]	235
880	890	8				3	3		15	28	4	42
890	900	6					1		11		2	20
900	910	5							7			6
910	920	3							4			2
920	930	17							21			4
930	940	17							18			
940	950	5							4			
950	960	5							4			
960	970	8							3			
970	980	14							5			
980	990	12										
990	1000	4										
1000	1010	3										
1010	1020	3										
1020	1030	18										
1030	1040	15										
1040	1050	1										
1050	1060	1										
1060	1070	1										
1070	1080	4										
1080	1090	3										
400	1090	594	6360	7108	8004	4258	.145	9496	6692	7887	10654	1114[illegible]
		WEIGHTING FACTORS REFERENCED TO THE VARO PHOTOCATHODE (=1)										
400	1090	0.053	0.570	0.638	0.718	0.382	0.731	0.852	0.601	0.708	0.956	1

(a) Standard curves published by ITT.
(b) AEG-Telefunken, Ulm
(c) Westinghouse, Elmira
(d) Varian Associates, Palo Alto
(e) EMR Div. of Weston Instr. Princeton, New Jersey
(f) ITT-IL, Fort Wayne
(g) Varo Inc., Garland, Tex.
(h) Heimann GmbH, Wiesbaden

TABLE 2b.

TYPICAL SENSITIVITY VALUES, $I_{PC,N,T}$, OF PHOTOCATHODES IN RESPONSE TO NIGHT-SKY ILLUMINATION THROUGH KODAK WRATTEN FILTER 89b.

SPECTRAL INTERVAL $\Delta\lambda_i$ λ_1 to λ_2		PHOTOCATHODE TYPES: STANDARD (a)		TELE-FUNKEN (b)	INTER-FERENCE (c)	VARIAN 80/40 INTENS. (d)	EMR (e)	EMR (e)	ITT (f)	HEIMANN (h)	TELE-FUNKEN (b)	VARO 25mm INTENS. (g)
		S-1	S-20	S-20R	S-20		E-01	R-01	S-25	S-25H2	S-25T2	
λ [$\times 10^{-9}$m]		$I_{PC,N,T}$ [10^{-12}mA/cm^2]										
670	680				1			1		1	1	1
680	690	1	10	13	28	8	12	17	14	23	22	29
690	700	7	56	75	184	52	68	99	87	146	129	188
700	710	34	209	297	807	216	270	386	357	631	532	824
710	720	67	351	518	1539	396	466	672	648	1203	983	1603
720	730	89	386	595	1944	491	513	781	794	1549	1221	2090
730	740	118	406	673	2323	588	563	876	963	1954	1484	2640
740	750	100	278	498	1735	457	423	638	759	1575	1165	2169
750	760	91	198	404	1372	388	335	505	637	1363	994	1933
760	770	143	241	595	1826	568	452	701	928	2048	1488	2964
770	780	167	214	574	1696	619	464	713	1003	2268	1645	3358
780	790	144	135	533	1098	498	347	507	801	1838	1336	2851
790	800	124	82	321	713	395	253	342	611	1502	1097	2434
800	810	107		238		311	186	214	474	1244	898	2095
810	820	117		218		307	181	162	484	1288	927	2267
820	830	123		185		282	177	126	463	1281	901	2327
830	840	123		146		232	163	90	412	1179	805	2204
840	850	119		108		137	141	56	356	1015	626	1973
850	860	116		77		293	120	39	310	843	413	1625
860	870	325		150		190	289		787	1942	710	3257
870	880	299		85		29	221		654	1439	335	2113
880	890	72					30		139	255	39	384
890	900	58					15		100		17	179
900	910	45							69			58
910	920	33							44			20
920	930	160							192			44
930	940	159							168			
940	950	45							39			
950	960	52							37			
960	970	53							28			
970	980	130							47			
980	990	116										
990	1000	38										
1000	1010	33										
1010	1020	27										
1020	1030	166										
1030	1040	141										
1040	1050	16										
1050	1060	13										
1060	1070	11										
1070	1080	37										
1080	1090	30										
670	1090	1849	2566	6303	15266	6457	5689	6925	12406	26589	17768	41630
		WEIGHTING FACTORS REFERENCED TO THE VARO PHOTOCATHODE (=1)										
670	1090	0.093	0.062	0.151	0.367	0.155	0.13[illegible]	0.166	0.298	0.638	0.427	1

(a) Standard curves published by ITT.
(b) AEG-Telefunken, Ulm
(c) Westinghouse, Elmira
(d) Varian Associates, Palo Alto
(e) EMR Div. of Weston Instr. Princeton, New Jersey
(f) ITT-IL, Fort Wayne
(g) Varo Inc., Garland, Tex.
(h) Heimann GmbH, Wiesbaden

TABLE.3 SPECTRAL ENERGY DENSITY REQUIREMENT, S_L, & CONVERSION EFFICIENCY, η_L

WAVE LENGTH	KODAK IR FILM 5424			
	$S_{L,5424,0.3}$	$\eta_{L,5424,0.3}$	$S_{L,5424,1.0}$	$\eta_{L,5424,1.0}$
λ_i $[10^{-9}m]$	$[erg\ cm^{-2}]$	$[grains\ quantum^{-1}]$	$[erg\ cm^{-2}]$	$[grains\ quantum^{-1}]$
400	1.7370E-02	3.1940E-03	4.3650E-02	2.2933E-03
410	1.8190E-02	2.9757E-03	4.5700E-02	2.1370E-03
420	1.9950E-02	2.6485E-03	5.1290E-02	1.8588E-03
430	2.2900E-02	2.2537E-03	5.6230E-02	1.6560E-03
440	2.7540E-02	1.8314E-03	6.6060E-02	1.3776E-03
450	3.2350E-02	1.5244E-03	7.0790E-02	1.2570E-03
460	3.7150E-02	1.2986E-03	8.9120E-02	9.7672E-04
470	4.7860E-02	9.8657E-04	1.1481E-01	7.4204E-04
480	6.9180E-02	6.6831E-04	1.6218E-01	5.1436E-04
490	1.2022E-01	3.7673E-04	3.3113E-01	2.4678E-04
500	2.6302E-01	1.6875E-04	5.2480E-01	1.5260E-04
510	5.0118E-01	8.6823E-05	1.2589E 00	6.2364E-05
520	6.3096E-01	6.7639E-05	1.6596E 00	4.6398E-05
530	5.4954E-01	7.6195E-05	1.3490E 00	5.6005E-05
540	4.2658E-01	9.6340E-05	1.0965E 00	6.7626E-05
550	3.5481E-01	1.1372E-04	8.9125E-01	8.1685E-05
560	3.0199E-01	1.3123E-04	7.4131E-01	9.6453E-05
570	2.6302E-01	1.4803E-04	6.6069E-01	1.0632E-04
580	2.3988E-01	1.5951E-04	5.8884E-01	1.1724E-04
590	2.1878E-01	1.7193E-04	5.3703E-01	1.2637E-04
600	2.0417E-01	1.8116E-04	5.0119E-01	1.3315E-04
610	1.8620E-01	1.9538E-04	4.6773E-01	1.4034E-04
620	1.7782E-01	2.0129E-04	4.3651E-01	1.4795E-04
630	1.6596E-01	2.1225E-04	4.2658E-01	1.4899E-04
640	1.5849E-01	2.1879E-04	3.8904E-01	1.6082E-04
650	1.5135E-01	2.2558E-04	3.6308E-01	1.6966E-04
660	1.4454E-01	2.3263E-04	3.4673E-01	1.7497E-04
670	1.3490E-01	2.4553E-04	3.3113E-01	1.8048E-04
680	1.2303E-01	2.6527E-04	2.9512E-01	1.9952E-04
690	1.1220E-01	2.8665E-04	2.6302E-01	2.2063E-04
700	1.0000E-01	3.1703E-04	2.2908E-01	2.4970E-04
710	9.1200E-02	3.4273E-04	2.1379E-01	2.6379E-04
720	8.5110E-02	3.6215E-04	1.9953E-01	2.7872E-04
730	8.5110E-02	3.5719E-04	1.9953E-01	2.7490E-04
740	8.7090E-02	3.4435E-04	2.1379E-01	2.5310E-04
750	8.5110E-02	3.4766E-04	2.0892E-01	2.5554E-04
760	8.1280E-02	3.5925E-04	1.9952E-01	2.6406E-04
770	7.4130E-02	3.8879E-04	1.8620E-01	2.7928E-04
780	6.9180E-02	4.1127E-04	1.6982E-01	3.0229E-04
790	6.3090E-02	4.4526E-04	1.5135E-01	3.3488E-04
800	5.7540E-02	4.8210E-04	1.4454E-01	3.4628E-04
810	5.6230E-02	4.8724E-04	1.3804E-01	3.5811E-04
820	5.6230E-02	4.8130E-04	1.4454E-01	3.3783E-04
830	5.8880E-02	4.5410E-04	1.4791E-01	3.2616E-04
840	6.1650E-02	4.2854E-04	1.5488E-01	3.0777E-04
850	6.4560E-02	4.0441E-04	1.5849E-01	2.9722E-04
860	6.6060E-02	3.9063E-04	1.6982E-01	2.7417E-04
870	7.9430E-02	3.2114E-04	1.9055E-01	2.4153E-04
880	1.2589E-01	2.0032E-04	2.6915E-01	1.6905E-04
890	2.6302E-01	9.4803E-05	7.5858E-01	5.9308E-05
900	8.9125E-01	2.7667E-05	1.6596E 00	2.6808E-05

TABLE 4.

GRAIN RATE-DENSITY, $G_{N,(T)}$, FOR KODAK NEAR-IR FILM 5424 IN RESPONSE TO NIGHT-SKY ILLUMINATION WITH AND WITHOUT KODAK WRATTEN FILTER 89b.

SPECTRAL INTERVAL Λ_i λ_i to λ_2		KODAK NEAR-IR FILM 5424 IN RESPONSE TO NIGHT SKY ILLUMINATION			
		NO FILTER		WRATTEN FILTER 89b	
		Values of η_L used for intervals correspond to.			
		$D_\Delta = 0.3$	$D_\Delta = 1.0$	$D_\Delta = 0.3$	$D_\Delta = 1.0$
λ [$\times 10^{-9}$m]		G_N [10^8 Grains s^{-1} cm^{-2}]		$G_{N,T}$ [10^8 Grains s^{-1} cm^{-2}]	
400	410	1.141	.819		
410	420	1.293	.919		
420	430	1.299	.931		
430	440	1.225	.910		
440	450	1.157	.908		
450	460	1.100	.871		
460	470	1.016	.764		
470	480	.819	.621		
480	490	.569	.414		
490	500	.321	.235		
500	510	.158	.133		
510	520	.100	.070		
520	530	.097	.069		
530	540	.121	.087		
540	550	.158	.113		
550	560	.188	.137		
560	570	.219	.159		
570	580	.267	.194		
580	590	.296	.218		
590	600	.305	.224		
600	610	.337	.244		
610	620	.374	.272		
620	630	.436	.313		
630	640	.467	.336		
640	650	.491	.365		
650	660	.529	.398		
660	670	.528	.392		
670	680	.675	.503	0.000	0.000
680	690	.723	.550	.006	.004
690	700	.654	.510	.041	.032
700	710	.913	.711	.199	.155
710	720	.912	.702	.410	.316
720	730	.866	.667	.548	.422
730	740	.933	.702	.685	.515
740	750	.702	.516	.562	.413
750	760	.618	.454	.519	.381
760	770	1.009	.733	.862	.626
770	780	1.248	.907	1.080	.785
780	790	1.152	.856	1.003	.747
790	800	1.075	.790	.946	.695
800	810	.983	.714	.866	.629
810	820	1.089	.782	.963	.692
820	830	1.127	.800	.999	.709
830	840	1.076	.773	.956	.687
840	850	1.007	.732	.896	.651
850	860	.958	.688	.855	.615
860	870	2.480	1.797	2.219	1.607
870	880	1.746	1.375	1.565	1.232
880	890	.249	.192	.224	.173
890	900	.088	.062	.079	.055
400	900	37.317	27.650		
670	900			16.498	12.153

TABLE. 5. SPECTRAL ENERGY DENSITY REQUIREMENT, S_L.

WAVE LENGTH λ_i [10^{-9} m]	KODAK ROYAL-X PAN		KODAK TRI-X PAN	
	D_Δ=0.3	D_Δ=1.0	D_Δ=0.3	D_Δ=1.0
	$S_{L,R,0.3}$	$S_{L,R,1.0}$	$S_{L,T,0.3}$	$S_{L,T,1.0}$
	[10^{-1} erg cm^{-2}]			
250	0.1660	3.1623	0.3890	6.0256
260	0.1738	3.8019	0.3548	5.3703
270	0.1995	5.2481	0.3802	6.6069
280	0.2399	8.3176	0.4365	8.7096
290	0.1738	5.6234	0.4266	7.0795
300	0.1122	1.6989	0.3608	4.6774
310	0.0955	1.2589	0.3162	3.5481
320	0.0832	1.0233	0.2884	3.1623
330	0.0724	0.8128	0.2754	2.6303
340	0.0646	0.6310	0.2630	1.9953
350	0.0562	0.4898	0.2344	1.5849
360	0.0490	0.4074	0.2089	1.2589
370	0.0468	0.3890	0.1905	1.0965
380	0.0490	0.3981	0.1820	1.0000
390	0.0490	0.3890	0.1862	0.9333
400	0.0479	0.3802	0.1905	0.8913
410	0.0468	0.3802	0.1995	0.8913
420	0.0479	0.3802	0.2089	0.9120
430	0.0479	0.3802	0.2138	0.9120
440	0.0501	0.3890	0.2239	0.9550
450	0.0537	0.4074	0.2291	1.0000
460	0.0562	0.4266	0.2630	1.0715
470	0.0631	0.4467	0.2884	1.2023
480	0.0741	0.5012	0.3467	1.3490
490	0.0891	0.5623	0.3981	1.5136
500	0.1023	0.5754	0.5012	1.7378
510	0.1072	0.5623	0.5248	1.8621
520	0.1047	0.5012	0.5012	1.8197
530	0.0955	0.4365	0.4677	1.8197
540	0.0851	0.3802	0.4169	1.5849
550	0.0776	0.3467	0.3631	1.3804
560	0.0708	0.3162	0.3162	1.2589
570	0.0661	0.3020	0.2818	1.1749
580	0.0676	0.2951	0.3020	1.2023
590	0.0692	0.3020	0.3311	1.2023
600	0.0708	0.3162	0.3384	1.1750
610	0.0759	0.3467	0.3467	1.3490
620	0.0794	0.3981	0.3981	1.4125
630	0.1000	0.4677	0.4074	1.4791
640	0.2399	1.2589	0.3981	1.4125
650	1.2589	5.7544	0.3981	1.3490
660	0.	0.	0.3631	1.2589
670	0.	0.	0.3388	1.1220
680	0.	0.	0.3467	1.1220
690	0.	0.	0.5012	1.5849
700	0.	0.	1.2589	3.9811
710	0.	0.	3.9800	0.
720	0.	0.	0.	0.
730	0.	0.	0.	0.
740	0.	0.	0.	0.

TABLE. 6. PHOSPHOR SCREEN EFFICIENCY, η_{Pn}, ($\lambda_A = 10^{-9}$ m, V_{acc} = 10KV)

WAVE LENGTH	PHOSPHOR SCREEN TYPES.							
	P-4	P-11	P-16	P-20	P-22B	P-22G	P-22R	P-31
λ_i [10^{-9} m]	η_{Pn} [10^{-3}]							
250	0.	0.	0.	0.	0.	0.	0.	0.
260	0.	0.	0.	0.	0.	0.	0.	0.
270	0.	0.	0.	0.	0.	0.	0.	0.
280	0.	0.	0.	0.	0.	0.	0.	0.
290	0.	0.	0.	0.	0.	0.	0.	0.
300	0.	0.	0.	0.	0.	0.	0.	0.
310	0.	0.	0.	0.	0.	0.	0.	0.
320	0.	0.	0.	0.	0.	0.	0.	0.
330	0.	0.	0.	0.	0.	0.	0.	0.
340	0.	0.	0.	0.	0.	0.	0.	0.
350	0.	0.	0.140	0.	0.	0.	0.	0.
360	0.	0.024	0.500	0.	0.029	0.	0.	0.
370	0.032	0.043	0.720	0.	0.057	0.	0.	0.
380	0.057	0.077	0.790	0.	0.090	0.	0.	0.022
390	0.100	0.140	0.790	0.	0.165	0.	0.	0.040
400	0.175	0.240	0.730	0.	0.280	0.	0.	0.073
410	0.350	0.470	0.550	0.	0.550	0.	0.	0.160
420	0.650	0.800	0.390	0.	0.950	0.020	0.	0.315
430	0.875	1.350	0.230	0.	1.500	0.031	0.	0.580
440	0.965	1.950	0.120	0.	2.200	0.051	0.	0.875
450	0.940	2.300	0.064	0.	2.550	0.080	0.	1.080
460	0.780	2.400	0.030	0.	2.300	0.135	0.	1.130
470	0.600	2.300	0.	0.051	1.600	0.230	0.	1.050
480	0.490	2.050	0.	0.080	0.975	0.380	0.	1.080
490	0.430	1.770	0.	0.155	0.620	0.660	0.	1.350
500	0.405	1.500	0.	0.280	0.400	1.100	0.	1.700
510	0.440	1.150	0.	0.530	0.240	1.570	0.	2.150
520	0.500	0.880	0.	0.800	0.145	1.800	0.	2.300
530	0.570	0.640	0.	1.050	0.090	1.880	0.	2.200
540	0.650	0.430	0.	1.200	0.051	1.750	0.	2.000
550	0.720	0.280	0.	1.300	0.028	1.560	0.025	1.400
560	0.780	0.180	0.	1.350	0.	1.300	0.043	1.000
570	0.800	0.125	0.	1.300	0.	1.000	0.100	0.700
580	0.790	0.071	0.	1.180	0.	0.750	0.195	0.500
590	0.730	0.043	0.	0.980	0.	0.610	0.310	0.340
600	0.610	0.027	0.	0.850	0.	0.470	0.450	0.230
610	0.460	0.018	0.	0.670	0.	0.340	0.630	0.150
620	0.350	0.	0.	0.530	0.	0.250	0.750	0.110
630	0.260	0.	0.	0.410	0.	0.185	0.870	0.074
640	0.190	0.	0.	0.310	0.	0.140	0.950	0.054
650	0.145	0.	0.	0.240	0.	0.105	1.050	0.038
660	0.110	0.	0.	0.175	0.	0.078	1.080	0.028
670	0.075	0.	0.	0.135	0.	0.060	1.100	0.020
680	0.057	0.	0.	0.105	0.	0.047	1.080	0.
690	0.042	0.	0.	0.076	0.	0.036	1.050	0.
700	0.031	0.	0.	0.056	0.	0.027	0.980	0.
710	0.021	0.	0.	0.040	0.	0.	0.900	0.
720	0.	0.	0.	0.028	0.	0.	0.780	0.
730	0.	0.	0.	0.018	0.	0.	0.700	0.
740	0.	0.	0.	0.	0.	0.	0.	0.

TABLE 7A. TYPICAL SPECTRAL SENSITIVITY VALUES, I_{pc}, OF PHOTOCATHODES.

WAVE LENGTH	STANDARD (a)		TELEFUNKEN (b)	ITT (f)	HEIMANN (h)	VARO (g)
	S-1	S-20	S-20R	S-25	S-25 H	
λ_i [10^{-9}m]	I_{pc} [10^{-1} AW^{-1}]					
250	0.	0.	0.	0.	0.	0.
260	0.	0.	0.	0.	0.	0.
270	0.	0.	0.	0.	0.	0.
280	0.	0.	0.	0.	0.	0.
290	0.	0.	0.	0.	0.	0.
300	0.	0.070	0.070	0.070	0.	0.
310	0.008	0.200	0.200	0.150	0.	0.
320	0.016	0.280	0.280	0.210	0.	0.
330	0.022	0.350	0.350	0.250	0.	0.
340	0.029	0.420	0.420	0.290	0.	0.
350	0.033	0.450	0.450	0.310	0.	0.
360	0.036	0.500	0.500	0.350	0.	0.
370	0.032	0.550	0.550	0.370	0.	0.
380	0.027	0.600	0.600	0.380	0.	0.
390	0.020	0.610	0.610	0.390	0.	0.
400	0.014	0.635	0.635	0.410	0.	0.042
410	0.009	0.650	0.650	0.430	0.	0.058
420	0.006	0.660	0.660	0.435	0.	0.080
430	0.005	0.660	0.660	0.440	0.520	0.100
440	0.004	0.640	0.640	0.435	0.490	0.130
450	0.004	0.630	0.630	0.430	0.455	0.160
460	0.004	0.615	0.615	0.420	0.430	0.200
470	0.004	0.580	0.580	0.415	0.415	0.240
480	0.004	0.565	0.565	0.410	0.405	0.260
490	0.005	0.555	0.555	0.400	0.402	0.290
500	0.005	0.530	0.530	0.390	0.400	0.320
510	0.005	0.510	0.540	0.380	0.420	0.340
520	0.006	0.485	0.520	0.375	0.455	0.360
530	0.006	0.470	0.500	0.370	0.475	0.380
540	0.007	0.445	0.480	0.360	0.480	0.390
550	0.007	0.425	0.450	0.350	0.480	0.400
560	0.008	0.405	0.430	0.342	0.480	0.405
570	0.009	0.395	0.420	0.336	0.475	0.410
580	0.010	0.365	0.400	0.328	0.450	0.415
590	0.010	0.345	0.370	0.320	0.430	0.420
600	0.011	0.325	0.350	0.312	0.420	0.425
610	0.012	0.310	0.340	0.302	0.402	0.430
620	0.013	0.290	0.320	0.290	0.383	0.435
630	0.013	0.270	0.300	0.280	0.365	0.440
640	0.014	0.250	0.285	0.270	0.356	0.445
650	0.015	0.230	0.260	0.265	0.350	0.450
660	0.016	0.210	0.240	0.255	0.344	0.455
670	0.017	0.187	0.235	0.250	0.334	0.460
680	0.018	0.170	0.220	0.240	0.323	0.465
690	0.019	0.153	0.200	0.225	0.312	0.470
700	0.020	0.132	0.180	0.215	0.300	0.480
710	0.020	0.115	0.170	0.205	0.280	0.490
720	0.021	0.102	0.150	0.195	0.262	0.500
730	0.022	0.083	0.135	0.185	0.236	0.500
740	0.023	0.071	0.120	0.180	0.225	0.500

TABLE 7.A CONTINUED

WAVE LENGTH	STANDARD (a)		TELEFUNKEN (b)	ITT (f)	HEIMANN (h)	VARO (g)
	S-1	S-20	S-20R	S-25	S-25H	
λ_i [10^{-9}m]	I_{pc} [10^{-1} AW^{-1}]					
740	0.023	0.071	0.120	0.180	0.225	0.500
750	0.023	0.057	0.110	0.170	0.215	0.500
760	0.024	0.045	0.099	0.160	0.204	0.500
770	0.024	0.036	0.088	0.150	0.197	0.490
780	0.024	0.026	0.078	0.140	0.190	0.480
790	0.024	0.019	0.068	0.130	0.184	0.480
800	0.024	0.014	0.058	0.110	0.176	0.475
810	0.024	0.	0.050	0.105	0.160	0.475
820	0.024	0.	0.040	0.095	0.150	0.460
830	0.024	0.	0.032	0.085	0.135	0.445
840	0.024	0.	0.025	0.075	0.120	0.410
850	0.023	0.	0.018	0.066	0.105	0.370
860	0.023	0.	0.013	0.058	0.092	0.280
870	0.022	0.	0.008	0.052	0.077	0.175
880	0.021	0.	0.005	0.044	0.061	0.135
890	0.021	0.	0.	0.038	0.043	0.090
900	0.020	0.	0.	0.032	0.020	0.035
910	0.019	0.	0.	0.027	0.	0.015
920	0.018	0.	0.	0.022	0.	0.007
930	0.016	0.	0.	0.019	0.	0.002
940	0.015	0.	0.	0.015	0.	0.
950	0.014	0.	0.	0.011	0.	0.
960	0.013	0.	0.	0.008	0.	0.
970	0.012	0.	0.	0.005	0.	0.
980	0.011	0.	0.	0.003	0.	0.
990	0.009	0.	0.	0.	0.	0.
1000	0.008	0.	0.	0.	0.	0.
1010	0.007	0.	0.	0.	0.	0.
1020	0.006	0.	0.	0.	0.	0.
1030	0.005	0.	0.	0.	0.	0.
1040	0.004	0.	0.	0.	0.	0.
1050	0.004	0.	0.	0.	0.	0.
1060	0.003	0.	0.	0.	0.	0.
1070	0.003	0.	0.	0.	0.	0.
1080	0.002	0.	0.	0.	0.	0.
1090	0.002	0.	0.	0.	0.	0.

TABLE. 7B. TYPICAL SPECTRAL SENSITIVITY VALUES, I_{PC}, OF PHOTOCATHODES.

WAVE LENGTH	S-4	ITT (f) S-11	S-17	VARIAN (d)	INTER-FERENCE (c)	ITT (f) Ga As
λ_i $[10^{-9} m]$	I_{PC} $[10^{-1} AW^{-1}]$					
250	0.	0.	0.	0.	0.	0.
260	0.	0.	0.	0.	0.	0.
270	0.	0.	0.	0.	0.	0.
280	0.	0.	0.082	0.	0.	0.
290	0.	0.	0.170	0.	0.	0.
300	0.	0.	0.330	0.	0.	0.
310	0.100	0.	0.440	0.	0.	0.
320	0.210	0.033	0.540	0.	0.	0.330
330	0.300	0.088	0.620	0.	0.	0.490
340	0.335	0.220	0.650	0.	0.	0.670
350	0.355	0.310	0.680	0.	0.	0.770
360	0.375	0.370	0.700	0.	0.500	0.840
370	0.390	0.410	0.710	0.	0.340	0.900
380	0.405	0.430	0.710	0.	0.300	0.920
390	0.412	0.440	0.720	0.	0.340	0.940
400	0.415	0.460	0.730	0.250	0.380	0.950
410	0.415	0.470	0.740	0.285	0.450	0.960
420	0.412	0.480	0.750	0.305	0.550	0.970
430	0.410	0.490	0.770	0.320	0.660	0.970
440	0.405	0.490	0.780	0.325	0.820	0.970
450	0.395	0.490	0.800	0.320	0.980	0.970
460	0.385	0.480	0.810	0.310	1.040	0.970
470	0.370	0.470	0.820	0.305	1.050	0.970
480	0.355	0.460	0.830	0.300	0.990	0.970
490	0.335	0.440	0.830	0.290	0.780	0.970
500	0.310	0.420	0.830	0.280	0.430	0.970
510	0.285	0.390	0.830	0.270	0.150	0.970
520	0.270	0.360	0.820	0.265	0.070	0.970
530	0.240	0.340	0.780	0.255	0.038	0.960
540	0.215	0.310	0.740	0.245	0.035	0.960
550	0.185	0.270	0.650	0.235	0.040	0.950
560	0.160	0.230	0.550	0.230	0.070	0.950
570	0.135	0.195	0.390	0.220	0.110	0.940
580	0.110	0.165	0.290	0.210	0.145	0.930
590	0.088	0.130	0.190	0.205	0.170	0.920
600	0.066	0.100	0.130	0.195	0.205	0.910
610	0.047	0.068	0.096	0.190	0.235	0.900
620	0.031	0.044	0.070	0.180	0.270	0.880
630	0.021	0.028	0.057	0.175	0.295	0.870
640	0.014	0.016	0.046	0.170	0.330	0.860
650	0.	0.009	0.036	0.160	0.360	0.850
660	0.	0.006	0.022	0.155	0.385	0.830
670	0.	0.004	0.015	0.150	0.410	0.800
680	0.	0.009	0.012	0.145	0.430	0.770
690	0.	0.006	0.	0.145	0.460	0.760
700	0.	0.003	0.	0.130	0.470	0.730
710	0.	0.002	0.	0.125	0.480	0.720
720	0.	0.002	0.	0.120	0.470	0.680
730	0.	0.	0.	0.115	0.460	0.660
740	0.	0.	0.	0.110	0.420	0.620

TABLE. 7 B. CONTINUED.

WAVE LENGTH	S-4	ITT (f) S-11	S-17	VARIAN (d)	INTER-FERENCE (c)	ITT (f) Ga As
λ_i $[10^{-9} m]$	I_{pc} $[10^{-1} AW^{-1}]$					
740	0.	0.	0.	0.110	0.420	0.620
750	0.	0.	0.	0.105	0.380	0.570
760	0.	0.	0.	0.098	0.330	0.540
770	0.	0.	0.	0.092	0.280	0.500
780	0.	0.	0.	0.086	0.210	0.470
790	0.	0.	0.	0.080	0.160	0.430
800	0.	0.	0.	0.075	0.120	0.390
810	0.	0.	0.	0.068	0.	0.370
820	0.	0.	0.	0.058	0.	0.340
830	0.	0.	0.	0.050	0.	0.310
840	0.	0.	0.	0.040	0.	0.280
850	0.	0.	0.	0.032	0.	0.250
860	0.	0.	0.	0.024	0.	0.220
870	0.	0.	0.	0.017	0.	0.190
880	0.	0.	0.	0.011	0.	0.180
890	0.	0.	0.	0.006	0.	0.150
900	0.	0.	0.	0.003	0.	0.130
910	0.	0.	0.	0.	0.	0.110
920	0.	0.	0.	0.	0.	0.090
930	0.	0.	0.	0.	0.	0.080
940	0.	0.	0.	0.	0.	0.060
950	0.	0.	0.	0.	0.	0.040
960	0.	0.	0.	0.	0.	0.030
970	0.	0.	0.	0.	0.	0.010
980	0.	0.	0.	0.	0.	0.
990	0.	0.	0.	0.	0.	0.
1000	0.	0.	0.	0.	0.	0.
1010	0.	0.	0.	0.	0.	0.
1020	0.	0.	0.	0.	0.	0.
1030	0.	0.	0.	0.	0.	0.
1040	0.	0.	0.	0.	0.	0.
1050	0.	0.	0.	0.	0.	0.
1060	0.	0.	0.	0.	0.	0.
1070	0.	0.	0.	0.	0.	0.
1080	0.	0.	0.	0.	0.	0.
1090	0.	0.	0.	0.	0.	0.

TABLE. 7C. TYPICAL SPECTRAL SENSITIVITY VALUES, I_{PC}, OF PHOTOCATHODES

WAVE LENGTH	HEIMANN (h)	TELEFUNKEN (b)	TELEFUNKEN (b)
	S-25H2	S-25T1	S-25T2
$\lambda_1\,[10^{-9}m]$	$I_{PC}\,[10^{-1}AW^{-1}]$		
250	0.	0.	0.
260	0.	0.	0.
270	0.	0.	0.
280	0.	0.	0.
290	0.	0.	0.
300	0.	0.	0.
310	0.	0.	0.
320	0.	0.	0.
330	0.	0.	0.
340	0.	0.	0.
350	0.	0.	0.
360	0.	0.	0.
370	0.	0.	0.
380	0.	0.	0.
390	0.	0.	0.
400	0.	0.	0.
410	0.	0.	0.
420	0.	0.360	0.455
430	0.083	0.370	0.480
440	0.102	0.385	0.515
450	0.123	0.395	0.550
460	0.155	0.405	0.600
470	0.181	0.405	0.635
480	0.201	0.402	0.675
490	0.221	0.395	0.700
500	0.241	0.387	0.720
510	0.255	0.380	0.735
520	0.264	0.375	0.745
530	0.273	0.365	0.735
540	0.283	0.360	0.720
550	0.289	0.350	0.695
560	0.293	0.342	0.665
570	0.301	0.335	0.635
530	0.308	0.330	0.620
590	0.318	0.315	0.580
600	0.326	0.307	0.550
610	0.332	0.300	0.520
620	0.337	0.290	0.505
630	0.342	0.272	0.465
640	0.348	0.262	0.440
650	353	0.252	0.410
660	0.359	0.237	0.390
670	0.362	0.230	0.370
680	0.364	0.217	0.347
690	0.367	[illegible]	0.335
700	0.369	[illegible]	[illegible]
710	0.372	0.192	0.310
720	0.371	0.185	0.297
730	0.370	0.177	[illegible]
740	0.370	0.172	[illegible]

TABLE. 7C. CONTINUED

WAVE LENGTH	HEIMANN (h) S-25H2	TELEFUNKEN (b) S-25T1	TELEFUNKEN (b) S-25T2
$\lambda_i\ [10^{-9}m]$	$I_{PC}\ [10^{-1}AW^{-1}]$		
740	0.370	0.172	0.275
750	0.356	0.162	0.262
760	0.349	0.155	0.252
770	0.335	0.150	0.245
780	0.320	0.140	0.230
790	0.299	0.135	0.220
800	0.290	0.127	0.210
810	0.274	0.117	0.197
820	0.257	0.110	0.185
830	0.241	0.100	0.165
840	0.216	0.090	0.147
850	0.185	0.080	0.100
860	0.152	0.062	0.065
870	0.119	0.041	0.034
880	0.092	0.021	0.015
890	0.057	0.015	0.008
900	0.	0.008	0.004
910	0.	0.	0.
920	0.	0.	0.
930	0.	0.	0.
940	0.	0.	0.
950	0.	0.	0.
960	0.	0.	0.
970	0.	0.	0.
980	0.	0.	0.
990	0.	0.	0.
1000	0.	0.	0.
1010	0.	0.	0.
1020	0.	0.	0.
1030	0.	0.	0.
1040	0.	0.	0.
1050	0.	0.	0.
1060	0.	0.	0.
1070	0.	0.	0.
1080	0.	0.	0.
1090	0.	0.	0.

TABLE 8. SPECTRAL ENERGY VALUES, $E^{\dagger}_{Q,\lambda}$, $E^{*\dagger}_{Q,\lambda}$, IN REFERENCE TO INTERVAL CENTER.

SPECTRAL INTERVAL Δ_i λ_1 to λ_2 [10^{-9} m]		ENERGY PER QUANTUM $E^{\dagger}_{Q,\lambda}$ [10^{-19} joule]	ENERGY PER QUANTUM $E^{*\dagger}_{Q,\lambda}$ [eV]	SPECTRAL INTERVAL Δ_i λ_1 to λ_2 [10^{-9} m]		ENERGY PER QUANTUM $E^{\dagger}_{Q,\lambda}$ [10^{-19} joule]	ENERGY PER QUANTUM $E^{*\dagger}_{Q,\lambda}$ [eV]
250	260	7.7894313	4.8620132	670	680	2.9426740	1.8367605
260	270	7.4954905	4.6785409	680	690	2.8997153	1.8099465
270	280	7.2229272	4.5084122	690	700	2.8579928	1.7839041
280	290	6.9694912	4.3502223	700	710	2.8174539	1.7586005
290	300	6.7332372	4.2027571	710	720	2.7780489	1.7340047
300	310	6.5124[illegible]53	4.0649618	720	730	2.7397310	1.7100874
310	320	6.3057301	3.9359154	730	740	2.7024558	1.6868209
320	330	6.1117076	3.8148103	740	750	2.6661812	1.6641790
330	340	5.9292686	3.7009354	750	760	2.6308675	1.6421369
340	350	5.7574057	3.5936619	760	770	2.5964771	1.6206710
350	360	5.5952253	3.4924320	770	780	2.5629742	1.5997592
360	370	5.4419314	3.3967489	780	790	2.5303248	1.5793801
370	380	5.2968132	3.3061689	790	800	2.4984968	1.5595137
380	390	5.1592337	3.2202944	800	810	2.4674596	1.5401408
390	400	5.0286202	3.1387680	810	820	2.4371840	1.5212434
400	410	4.9044567	3.0612675	820	830	2.4076424	1.5028041
410	420	4.7862770	2.9875020	830	840	2.3788083	1.4848064
420	430	4.6736588	2.9172079	840	850	2.3506568	1.4672347
430	440	4.5662183	2.8501456	850	860	2.3231637	1.4500741
440	450	4.4636067	2.7860974	860	870	2.2963063	1.4333102
450	460	4.3655054	2.7248645	870	880	2.2700628	1.4169295
460	470	4.2716236	2.6662653	880	890	2.2444124	1.4009190
470	480	4.1816947	2.6101334	890	900	2.2193352	1.3852663
480	490	4.0954742	2.5563162	900	910	2.1948121	1.3699595
490	500	4.0127373	2.5046735	910	920	2.1708251	1.3549873
500	510	3.9332772	2.4550759	920	930	2.1473567	1.3403388
510	520	3.8569029	2.4074046	930	940	2.1243904	1.3260036
520	530	3.7834381	2.3615493	940	950	2.1019100	1.3119718
530	540	3.7127196	2.3174081	950	960	2.0799005	1.2982339
540	550	3.6445963	2.2748869	960	970	2.0583471	1.2847807
550	560	3.5789279	2.2338979	970	980	2.0372359	1.2716035
560	570	3.5155841	2.1943599	980	990	2.0165533	1.2586938
570	580	3.4544435	2.1561971	990	1000	1.9962864	1.2460436
580	590	3.3953931	2.1193390	1000	1010	1.9764229	1.2336451
590	600	3.3383277	2.0837199	1010	1020	1.9569507	1.2214910
600	610	3.2831487	2.0492783	1020	1030	1.9378585	1.2095740
610	620	3.2297642	2.0159567	1030	1040	1.9191352	1.1978873
620	630	3.1780879	1.9837014	1040	1050	1.9007703	1.1864243
630	640	3.1280393	1.9524620	1050	1060	1.8827535	1.1751785
640	650	3.0795426	1.9221913	1060	1070	1.8650[illegible]	1.1641440
650	660	3.0325267	1.8928448	1070	1080	1.8477256	1.1533147
660	670	2.9869248	1.8643810	1080	1090	1.8306958	1.1426851

TABLE. 9A. DENSITY ENERGY REQUIREMENT, $S^{\dagger}_{L}$, AND CONVERSION EFFICIENCY, $\eta^{\dagger}_{L}$.

SPECTRAL INTERVAL Λ_i λ_1 to λ_2 λ_i [10^{-9} m]	KODAK ROYAL-X PAN			
	$S^{\dagger}_{L,R,0.3}$ [erg cm^{-2}]	$\eta^{\dagger}_{L,R,0.3}$ [grains quantum^{-1}]	$S^{\dagger}_{L,R,1.0}$ [erg cm^{-2}]	$\eta^{\dagger}_{L,R,1.0}$ [grains quantum^{-1}]
250 260	1.6990E-02	4.2591E-03	3.4821E-01	3.7495E-04
260 270	1.8665E-02	3.7306E-03	4.5250E-01	2.7764E-04
270 280	2.1970E-02	3.0541E-03	6.7828E-01	1.7849E-04
280 290	2.0685E-02	3.1300E-03	6.9705E-01	1.6759E-04
290 300	1.4300E-02	4.3741E-03	3.6611E-01	3.0826E-04
300 310	1.0385E-02	5.8256E-03	1.4789E-01	7.3810E-04
310 320	8.9350E-03	6.5561E-03	1.1411E-01	9.2623E-04
320 330	7.7800E-03	7.2977E-03	9.1805E-02	1.1158E-03
330 340	6.8500E-03	8.0411E-03	7.2190E-02	1.3767E-03
340 350	6.0400E-03	8.8551E-03	5.6040E-02	1.7220E-03
350 360	5.2600E-03	9.8818E-03	4.4860E-02	2.0906E-03
360 370	4.7900E-03	1.0554E-02	3.9820E-02	2.2907E-03
370 380	4.7900E-03	1.0273E-02	3.9355E-02	2.2559E-03
380 390	4.9000E-03	9.7812E-03	3.9355E-02	2.1973E-03
390 400	4.8450E-03	9.6418E-03	3.8460E-02	2.1915E-03
400 410	4.7350E-03	9.6222E-03	3.8020E-02	2.1622E-03
410 420	4.7350E-03	9.3903E-03	3.8020E-02	2.1101E-03
420 430	4.7900E-03	9.0641E-03	3.8020E-02	2.0604E-03
430 440	4.9000E-03	8.6569E-03	3.8460E-02	1.9900E-03
440 450	5.1900E-03	7.9895E-03	3.9820E-02	1.8788E-03
450 460	5.4950E-03	7.3802E-03	4.1700E-02	1.7547E-03
460 470	5.9650E-03	6.6525E-03	4.3665E-02	1.6397E-03
470 480	6.8600E-03	5.6628E-03	4.7395E-02	1.4789E-03
480 490	8.1600E-03	4.6625E-03	5.3175E-02	1.2909E-03
490 500	9.5700E-03	3.8952E-03	5.6885E-02	1.1824E-03
500 510	1.0475E-02	3.4882E-03	5.6885E-02	1.1589E-03
510 520	1.0595E-02	3.3817E-03	5.3175E-02	1.2157E-03
520 530	1.0010E-02	3.5112E-03	4.6885E-02	1.3526E-03
530 540	9.0300E-03	3.8195E-03	4.0835E-02	1.5239E-03
540 550	8.1350E-03	4.1619E-03	3.6345E-02	1.6808E-03
550 560	7.4200E-03	4.4808E-03	3.3145E-02	1.8098E-03
560 570	6.8450E-03	4.7712E-03	3.0910E-02	1.9064E-03
570 580	6.6850E-03	4.8004E-03	2.9855E-02	1.9394E-03
580 590	6.8400E-03	4.6114E-03	2.9855E-02	1.9063E-03
590 600	7.0000E-03	4.4303E-03	3.0910E-02	1.8102E-03
600 610	7.3350E-03	4.1581E-03	3.3145E-02	1.6603E-03
610 620	7.7650E-03	3.8640E-03	3.7240E-02	1.4537E-03
620 630	8.9700E-03	3.2914E-03	4.3290E-02	1.2305E-03
630 640	1.6995E-02	1.7098E-03	8.6330E-02	6.0732E-04
640 650	7.4940E-02	3.8175E-04	3.5066E-01	1.4720E-04
650 660	0.	0.	0.	0.
660 670	0.	0.	0.	0.
670 680	0.	0.	0.	0.
680 690	0.	0.	0.	0.
690 700	0.	0.	0.	0.
700 710	0.	0.	0.	0.
710 720	0.	0.	0.	0.
720 730	0.	0.	0.	0.
730 740	0.	0.	0.	0.

TABLE. 9B. DENSITY ENERGY REQUIREMENT, S_L^t, AND CONVERSION EFFICIENCY, η_L^t.

SPECTRAL INTERVAL Δ_i λ_1 to λ_2 λ_i [10^{-9} m]	KODAK TRI-X PAN			
	$S^t_{L,T,0.3}$ [erg cm^{-2}]	$\eta^t_{L,T,0.3}$ [grains quantum^{-1}]	$S^t_{L,T,1.0}$ [erg cm^{-2}]	$\eta^t_{L,T,1.0}$ [grains qantum^{-1}]
250 260	3.7190E-02	2.1831E-03	5.6979E-01	2.5710E-04
260 270	3.6750E-02	2.1259E-03	5.9886E-01	2.3539E-04
270 280	4.0835E-02	1.8437E-03	7.6582E-01	1.7737E-04
280 290	4.3155E-02	1.6833E-03	7.8945E-01	1.6603E-04
290 300	3.9370E-02	1.7826E-03	5.8784E-01	2.1541E-04
300 310	3.3850E-02	2.0053E-03	4.1127E-01	2.9780E-04
310 320	3.0230E-02	2.1742E-03	3.3552E-01	3.5345E-04
320 330	2.8190E-02	2.2598E-03	2.8963E-01	3.9685E-04
330 340	2.6920E-02	2.2958E-03	2.3128E-01	4.8214E-04
340 350	2.4870E-02	2.4130E-03	1.7901E-01	6.0486E-04
350 360	2.2165E-02	2.6312E-03	1.4219E-01	7.4004E-04
360 370	1.9970E-02	2.8404E-03	1.1777E-01	8.6901E-04
370 380	1.8625E-02	2.9643E-03	1.0482E-01	9.5029E-04
380 390	1.8410E-02	2.9210E-03	9.6665E-02	1.0037E-03
390 400	1.8835E-02	2.7828E-03	9.1230E-02	1.0366E-03
400 410	1.9500E-02	2.6216E-03	8.9130E-02	1.0348E-03
410 420	2.0420E-02	2.4431E-03	9.0165E-02	9.9831E-04
420 430	2.1135E-02	2.3049E-03	9.1200E-02	9.6376E-04
430 440	2.1885E-02	2.1748E-03	9.3350E-02	9.1992E-04
440 450	2.2650E-02	2.0541E-03	9.7750E-02	8.5877E-04
450 460	2.4605E-02	1.8493E-03	1.0357E-01	7.9266E-04
460 470	2.7570E-02	1.6149E-03	1.1369E-01	7.0661E-04
470 480	3.1755E-02	1.3726E-03	1.2756E-01	6.1649E-04
480 490	3.7240E-02	1.1463E-03	1.4313E-01	5.3812E-04
490 500	4.4965E-02	9.3018E-04	1.6257E-01	4.6420E-04
500 510	5.1300E-02	7.9917E-04	1.7999E-01	4.1096E-04
510 520	5.1300E-02	7.0365E-04	1.8409E-01	3.9402E-04
520 530	4.8445E-02	8.1403E-04	1.8197E-01	3.9102E-04
530 540	4.4230E-02	8.7494E-04	1.7023E-01	4.1017E-04
540 550	3.9000E-02	9.7406E-04	1.4826E-01	4.6229E-04
550 560	3.3965E-02	1.0983E-03	1.3196E-01	5.1004E-04
560 570	2.9900E-02	1.2252E-03	1.2169E-01	5.4331E-04
570 580	2.9190E-02	1.2335E-03	1.1886E-01	5.4657E-04
580 590	3.1655E-02	1.1180E-03	1.2023E-01	5.3111E-04
590 600	3.3475E-02	1.0395E-03	1.1886E-01	5.2818E-04
600 610	3.4255E-02	9.9901E-04	1.2620E-01	4.8926E-04
610 620	3.7240E-02	9.0399E-04	1.3807E-01	4.3991E-04
620 630	4.0275E-02	8.2249E-04	1.4458E-01	4.1339E-04
630 640	4.0275E-02	8.0954E-04	1.4458E-01	4.0688E-04
640 650	3.9810E-02	8.0630E-04	1.3807E-01	4.1945E-04
650 660	3.8060E-02	8.3050E-04	1.3039E-01	4.3737E-04
660 670	3.5095E-02	8.8712E-04	1.1904E-01	4.7187E-04
670 680	3.4275E-02	8.9488E-04	1.1220E-01	4.9324E-04
680 690	4.2395E-02	7.1292E-04	1.3534E-01	4.0292E-04
690 700	8.8005E-02	3.3850E-04	2.7830E-01	1.9313E-04
700 710	2.6194E-01	1.1211E-04	0.	0.
710 720	0.	0.	0.	0.
720 730	0.	0.	0.	0.
730 740	0.	0.	0.	0.

TABLE. 10A. SPECTRAL EFFICIENCIES, $\eta_P^\dagger$, $\eta_P^{*\dagger}$, $\eta_{P,q}^{*\dagger}$, OF PHOSPHOR SCREEN V_{acc}= 10 kV

SPECTRAL INTERVAL Δ_i λ_1 to λ_2 [10^{-9} m]		P-4 $\eta_P^\dagger$ [W_{out} W_{el}^{-1}]	P-4 $\eta_P^{*\dagger}$ [joules electron^{-1}]	P-4 $\eta_{P,q}^{*\dagger}$ [quanta electron^{-1}]
250	260	0.	0.	0.
260	270	0.	0.	0.
270	280	0.	0.	0.
280	290	0.	0.	0.
290	300	0.	0.	0.
300	310	0.	0.	0.
310	320	0.	0.	0.
320	330	0.	0.	0.
330	340	0.	0.	0.
340	350	0.	0.	0.
350	360	0.	0.	0.
360	370	0.	0.	0.
370	380	4.4500E-04	7.1293E-19	1.3460E 00
380	390	7.8500E-04	1.2576E-18	2.4377E 00
390	400	1.3750E-03	2.2029E-18	4.3807E 00
400	410	2.6250E-03	4.2055E-18	8.5749E 00
410	420	5.0000E-03	8.0105E-18	1.6736E 01
420	430	7.6250E-03	1.2216E-17	2.6138E 01
430	440	9.2000E-03	1.4739E-17	3.2279E 01
440	450	9.5250E-03	1.5260E-17	3.4188E 01
450	460	8.6000E-03	1.3778E-17	3.1561E 01
460	470	6.9000E-03	1.1054E-17	2.5879E 01
470	480	5.4500E-03	8.7314E-18	2.0880E 01
480	490	4.6000E-03	7.3697E-18	1.7995E 01
490	500	4.1750E-03	6.6888E-18	1.6669E 01
500	510	4.2250E-03	6.7689E-18	1.7209E 01
510	520	4.7000E-03	7.5299E-18	1.9523E 01
520	530	5.3500E-03	8.5712E-18	2.2655E 01
530	540	6.1000E-03	9.7728E-18	2.6323E 01
540	550	6.8500E-03	1.0974E-17	3.0111E 01
550	560	7.5000E-03	1.2016E-17	3.3574E 01
560	570	7.9000E-03	1.2657E-17	3.6001E 01
570	580	7.9500E-03	1.2737E-17	3.6870E 01
580	590	7.6000E-03	1.2176E-17	3.5860E 01
590	600	6.7000E-03	1.0734E-17	3.2154E 01
600	610	5.3500E-03	8.5712E-18	2.6107E 01
610	620	4.0500E-03	6.4885E-18	2.0090E 01
620	630	3.0500E-03	4.8864E-18	1.5375E 01
630	640	2.2500E-03	3.6047E-18	1.1524E 01
640	650	1.6750E-03	2.6835E-18	8.7140E 00
650	660	1.2750E-03	2.0427E-18	6.7359E 00
660	670	9.3000E-04	1.4900E-18	4.9883E 00
670	680	6.6500E-04	1.0654E-18	3.6205E 00
680	690	4.9500E-04	7.9304E-19	2.7349E 00
690	700	3.6500E-04	5.8477E-19	2.0461E 00
700	710	2.6000E-04	4.1655E-19	1.4784E 00
710	720	0.	0.	0.
720	730	0.	0.	0.
730	740	0.	0.	0.
SUM		1.5154E-01	2.4279E-16	6.3276E 02

TABLE. 10B. SPECTRAL EFFICIENCIES, $\eta_p^\dagger$, $\eta_p^{*\dagger}$, $\eta_{p,q}^{*\dagger}$, OF PHOSPHOR SCREEN V_{acc} = 10 kV

SPECTRAL INTERVAL Δ_i λ_1 to λ_2 [10^{-9} m]		P-11 $\eta_p^\dagger$ [W_{out} W_{el}^{-1}]	P-11 $\eta_p^{*\dagger}$ [joules electron^{-1}]	P-11 $\eta_{p,q}^{*\dagger}$ [quanta electron^{-1}]
250	260	0.	0.	0.
260	270	0.	0.	0.
270	280	0.	0.	0.
280	290	0.	0.	0.
290	300	0.	0.	0.
300	310	0.	0.	0.
310	320	0.	0.	0.
320	330	0.	0.	0.
330	340	0.	0.	0.
340	350	0.	0.	0.
350	360	0.	0.	0.
360	370	3.3500E-04	5.3670E-19	9.8624E-01
370	380	6.0000E-04	9.6126E-19	1.8148E 00
380	390	1.0850E-03	1.7383E-18	3.3693E 00
390	400	1.9000E-03	3.0440E-18	6.0533E 00
400	410	3.5500E-03	5.6875E-18	1.1597E 01
410	420	6.3500E-03	1.0173E-17	2.1255E 01
420	430	1.0750E-02	1.7223E-17	3.6850E 01
430	440	1.6500E-02	2.6435E-17	5.7892E 01
440	450	2.1250E-02	3.4045E-17	7.6272E 01
450	460	2.3500E-02	3.7649E-17	8.6243E 01
460	470	2.3500E-02	3.7649E-17	8.8138E 01
470	480	2.1750E-02	3.4846E-17	8.3329E 01
480	490	1.9100E-02	3.0600E-17	7.4717E 01
490	500	1.6350E-02	2.6194E-17	6.5278E 01
500	510	1.3250E-02	2.1228E-17	5.3970E 01
510	520	1.0150E-02	1.6261E-17	4.2162E 01
520	530	7.6000E-03	1.2176E-17	3.2182E 01
530	540	5.3500E-03	8.5712E-18	2.3086E 01
540	550	3.5500E-03	5.6875E-18	1.5605E 01
550	560	2.3000E-03	3.6848E-18	1.0296E 01
560	570	1.5250E-03	2.4432E-18	6.9496E 00
570	580	9.8000E-04	1.5701E-18	4.5450E 00
580	590	5.7000E-04	9.1320E-19	2.6895E 00
590	600	3.5000E-04	5.6073E-19	1.6797E 00
600	610	2.2500E-04	3.6047E-19	1.0979E 00
610	620	0.	0.	0.
620	630	0.	0.	0.
630	640	0.	0.	0.
640	650	0.	0.	0.
650	660	0.	0.	0.
660	670	0.	0.	0.
670	680	[illegible]	0.	0.
680	690	0.	0.	0.
690	700	0.	0.	0.
700	710	0.	0.	0.
710	720	0.	0.	0.
720	730	0.	0.	0.
730	740	0.	0.	0.
SUM		2.1237E-01	3.4024E-16	8.0806E 02

TABLE. 10C. SPECTRAL EFFICIENCIES, η_p^t, η_p^{*t}, $\eta_{p,q}^{*t}$, OF PHOSPHOR SCREEN V_{acc} = 10 kV

SPECTRAL Δ_l λ_1 to λ_2 $[10^{-9}$ m$]$	P-16		
	η_p^t	η_p^{*t}	$\eta_{p,q}^{*t}$
	$[W_{out}\ W_{el}^{-1}]$	[joules electron^{-1}]	[quanta electron^{-1}]
250 260	0.	0.	0.
260 270	0.	0.	0.
270 280	0.	0.	0.
280 290	0.	0.	0.
290 300	0.	0.	0.
300 310	0.	0.	0.
310 320	0.	0.	0.
320 330	0.	0.	0.
330 340	0.	0.	0.
340 350	0.	0.	0.
350 360	3.2000E-03	5.1267E-18	9.1627E 00
360 370	6.1000E-03	9.7728E-18	1.7958E 01
370 380	7.5500E-03	1.2096E-17	2.2836E 01
380 390	7.9000E-03	1.2657E-17	2.4532E 01
390 400	7.6000E-03	1.2176E-17	2.4213E 01
400 410	6.4000E-03	1.0253E-17	2.0906E 01
410 420	4.7000E-03	7.5299E-18	1.5732E 01
420 430	3.1000E-03	4.9665E-18	1.0627E 01
430 440	1.7500E-03	2.8037E-18	6.1400E 00
440 450	9.2000E-04	1.4739E-18	3.3021E 00
450 460	4.7000E-04	7.5299E-19	1.7249E 00
460 470	0.	0.	0.
470 480	0.	0.	0.
480 490	0.	0.	0.
490 500	0.	0.	0.
500 510	0.	0.	0.
510 520	0.	0.	0.
520 530	0.	0.	0.
530 540	0.	0.	0.
540 550	0.	0.	0.
550 560	0.	0.	0.
560 570	0.	0.	0.
570 580	0.	0.	0.
580 590	0.	0.	0.
590 600	0.	0.	0.
600 610	0.	0.	0.
610 620	0.	0.	0.
620 630	0.	0.	0.
630 640	0.	0.	0.
640 650	0.	0.	0.
650 660	0.	0.	0.
660 670	0.	0.	0.
670 680	0.	0.	0.
680 690	0.	0.	0.
690 700	0.	0.	0.
700 710	0.	0.	0.
710 720	0.	0.	0.
720 730	0.	0.	0.
730 740	0.	0.	0.
SUM	4.9690E-02	7.9608E-17	1.5713E 02

TABLE. 10 D. SPECTRAL EFFICIENCIES, η_P^{t}, η_P^{*t}, $\eta_{P,q}^{*t}$, OF PHOSPHOR SCREEN V_{acc} = 10 kV

SPECTRAL INTERVAL Δ_i λ_1 to λ_2 [10^{-9} m]		P-20 ξ [W_{out} W_{el}^{-1}]	P-20 η_P^{*t} [joules electron^{-1}]	P-20 $\eta_{P,q}^{*t}$ [quanta electron^{-1}]
250	260	0.	0.	0.
260	270	0.	0.	0.
270	280	0.	0.	0.
280	290	0.	0.	0.
290	300	0.	0.	0.
300	310	0.	0.	0.
310	320	0.	0.	0.
320	330	0.	0.	0.
330	340	0.	0.	0.
340	350	0.	0.	0.
350	360	0.	0.	0.
360	370	0.	0.	0.
370	380	0.	0.	0.
380	390	0.	0.	0.
390	400	0.	0.	0.
400	410	0.	0.	0.
410	420	0.	0.	0.
420	430	0.	0.	0.
430	440	0.	0.	0.
440	450	0.	0.	0.
450	460	0.	0.	0.
460	470	0.	0.	0.
470	480	6.5500E-04	1.0494E-18	2.5095E 00
480	490	1.1750E-03	1.8825E-18	4.5965E 00
490	500	2.1750E-03	3.4846E-18	8.6838E 00
500	510	4.0500E-03	6.4885E-18	1.6496E 01
510	520	6.6500E-03	1.0654E-17	2.7623E 01
520	530	9.2500E-03	1.4819E-17	3.9169E 01
530	540	1.1250E-02	1.8024E-17	4.8546E 01
540	550	1.2500E-02	2.0026E-17	5.4948E 01
550	560	1.3250E-02	2.1228E-17	5.9313E 01
560	570	1.3250E-02	2.1228E-17	6.0382E 01
570	580	1.2400E-02	1.9866E-17	5.7509E 01
580	590	1.0600E-02	1.7303E-17	5.0959E 01
590	600	9.1500E-03	1.4659E-17	4.3912E 01
600	610	7.6000E-03	1.2176E-17	3.7086E 01
610	620	6.0000E-03	9.6126E-18	2.9763E 01
620	630	4.7000E-03	7.5299E-18	2.3693E 01
630	640	3.6000E-03	5.7676E-18	1.8438E 01
640	650	2.7500E-03	4.4058E-18	1.4307E 01
650	660	2.0750E-03	3.3244E-18	1.0962E 01
660	670	1.5500E-03	2.4833E-18	8.3138E 00
670	680	1.2000E-03	1.9225E-18	6.5332E 00
680	690	9.0500E-04	1.4499E-18	5.0001E 00
690	700	6.6000E-04	1.0574E-18	3.6998E 00
700	710	4.8000E-04	7.6901E-19	2.7294E 00
710	720	3.4000E-04	5.4471E-19	1.9608E 00
720	730	2.3000E-04	3.6848E-19	1.3450E 00
730	740	0.	0.	0.
SUM		1.3864E-01	2.2212E-16	6.3848E 02

TABLE. 10E. SPECTRAL EFFICIENCIES, η_p^t, η_p^{*t}, $\eta_{p,q}^{*t}$, OF PHOSPHOR SCREEN V_{acc} = 10 kV

SPECTRAL INTERVAL Δ_i λ_1 to λ_2 [10^{-9} m]	P-22B		
	η_p [W_{out} W_{el}^{-1}]	η_p^{*} [joules electron^{-1}]	$\eta_{p,q}^{*}$ [quanta electron^{-1}]
250 260	0.	0.	0.
260 270	0.	0.	0.
270 280	0.	0.	0.
280 290	0.	0.	0.
290 300	0.	0.	0.
300 310	0.	0.	0.
310 320	0.	0.	0.
320 330	0.	0.	0.
330 340	0.	0.	0.
340 350	0.	0.	0.
350 360	0.	0.	0.
360 370	4.3000E-04	6.8890E-19	1.2659E 00
370 380	7.3500E-04	1.1775E-18	2.2231E 00
380 390	1.2750E-03	2.0427E-18	3.9593E 00
390 400	2.2250E-03	3.5647E-18	7.0888E 00
400 410	4.1500E-03	6.6487E-18	1.3556E 01
410 420	7.5000E-03	1.2016E-17	2.5105E 01
420 430	1.2250E-02	1.9626E-17	4.1992E 01
430 440	1.8500E-02	2.9639E-17	6.4909E 01
440 450	2.3750E-02	3.8050E-17	8.5245E 01
450 460	2.4250E-02	3.8851E-17	8.8995E 01
460 470	1.9500E-02	3.1241E-17	7.3136E 01
470 480	1.2875E-02	2.0627E-17	4.9327E 01
480 490	7.9750E-03	1.2777E-17	3.1197E 01
490 500	5.1000E-03	8.1707E-18	2.0362E 01
500 510	3.2000E-03	5.1267E-18	1.3034E 01
510 520	1.9250E-03	3.0840E-18	7.9962E 00
520 530	1.1750E-03	1.8825E-18	4.9755E 00
530 540	7.0500E-04	1.1295E-18	3.0422E 00
540 550	3.9500E-04	6.3283E-19	1.7363E 00
550 560	0.	0.	0.
560 570	0.	0.	0.
570 580	0.	0.	0.
580 590	0.	0.	0.
590 600	0.	0.	0.
600 610	0.	0.	0.
610 620	0.	0.	0.
620 630	0.	0.	0.
630 640	0.	0.	0.
640 650	0.	0.	0.
650 660	0.	0.	0.
660 670	0.	0.	0.
670 680	0.	0.	0.
680 690	0.	0.	0.
690 700	0.	0.	0.
700 710	0.	0.	0.
710 720	0.	0.	0.
720 730	0.	0.	0.
730 740	0.	0.	0.
SUM	1.4791E-01	2.3697E-16	5.3915E 02

TABLE 10F: SPECTRAL EFFICIENCIES, $\eta_p^\dagger$, $\eta_p^{*\dagger}$, $\eta_{p,q}^{*\dagger}$, OF PHOSPHOR SCREEN $V_{acc} = 10\,kV$

SPECTRAL INTERVAL Δ_i λ_1 to λ_2 $[10^{-9}m]$		P-22G		
		$\eta_p^\dagger$ $[W_{out}\,W_{el}^{-1}]$	$\eta_p^{*\dagger}$ [joules electron^{-1}]	$\eta_{p\cdot q}^{*\dagger}$ [quanta electron^{-1}]
250	260	0.	0.	0.
260	270	0.	0.	0.
270	280	0.	0.	0.
280	290	0.	0.	0.
290	300	0.	0.	0.
300	310	0.	0.	0.
310	320	0.	0.	0.
320	330	0.	0.	0.
330	340	0.	0.	0.
340	350	0.	0.	0.
350	360	0.	0.	0.
360	370	0.	0.	0.
370	380	0.	0.	0.
380	390	0.	0.	0.
390	400	0.	0.	0.
400	410	0.	0.	0.
410	420	0.	0.	0.
420	430	2.5500E-04	4.0854E-19	8.7412E-01
430	440	4.1000E-04	6.5686E-19	1.4385E 00
440	450	6.5500E-04	1.0494E-18	2.3510E 00
450	460	1.0750E-03	1.7223E-18	3.9452E 00
460	470	1.8250E-03	2.9238E-18	6.8448E 00
470	480	3.0500E-03	4.8864E-18	1.1685E 01
480	490	5.2000E-03	8.3309E-18	2.0342E 01
490	500	8.8000E-03	1.4098E-17	3.5134E 01
500	510	1.3350E-02	2.1388E-17	5.4377E 01
510	520	1.6850E-02	2.6995E-17	6.9992E 01
520	530	1.8400E-02	2.9479E-17	7.7915E 01
530	540	1.8150E-02	2.9078E-17	7.8320E 01
540	550	1.6250E-02	2.6034E-17	7.1432E 01
550	560	1.4000E-02	2.2429E-17	6.2671E 01
560	570	1.1500E-02	1.8424E-17	5.2407E 01
570	580	8.7500E-03	1.4018E-17	4.0581E 01
580	590	6.8000E-03	1.0894E-17	3.2085E 01
590	600	5.4000E-03	8.6513E-18	2.5915E 01
600	610	4.0500E-03	6.4885E-18	1.9763E 01
610	620	2.9500E-03	4.7262E-18	1.4633E 01
620	630	2.1750E-03	3.4846E-18	1.0964E 01
630	640	1.6250E-03	2.6034E-18	8.3228E 00
640	650	1.2250E-03	1.9626E-18	6.3729E 00
650	660	9.1500E-04	1.4659E-18	4.8340E 00
660	670	6.9000E-04	1.1054E-18	3.7010E 00
670	680	5.3500E-04	8.5712E-19	2.9127E 00
680	690	4.1500E-04	6.6487E-19	2.2929E 00
690	700	3.1500E-04	5.0466E-19	1.7658E 00
700	710	0.	0.	0.
710	720	0.	0.	0.
720	730	0.	0.	0.
730	740	0.	0.	0.
SUM		1.6561E-01	2.6533E-16	7.2387E 02

TABLE. 10G. SPECTRAL EFFICIENCIES, $\eta_p^{\dagger}$, $\eta_p^{*\dagger}$, $\eta_{p,q}^{*\dagger}$, OF PHOSPHOR SCREEN V_{acc} = 10 kV

SPECTRAL INTERVAL Δ_i λ_1 to λ_2 [10^{-9} m]		P-22R		
		$\eta_p^{\dagger}$ [W_{out} W_{ei}^{-1}]	$\eta_p^{*\dagger}$ [joules electron^{-1}]	$\eta_{p,q}^{*\dagger}$ [quanta electron^{-1}]
250	260	0.	0.	0.
260	270	0.	0.	0.
270	280	0.	0.	0.
280	290	0.	0.	0.
290	300	0.	0.	0.
300	310	0.	0.	0.
310	320	0.	0.	0.
320	330	0.	0.	0.
330	340	0.	0.	0.
340	350	0.	0.	0.
350	360	0.	0.	0.
360	370	0.	0.	0.
370	380	0.	0.	0.
380	390	0.	0.	0.
390	400	0.	0.	0.
400	410	0.	0.	0.
410	420	0.	0.	0.
420	430	0.	0.	0.
430	440	0.	0.	0.
440	450	0.	0.	0.
450	460	0.	0.	0.
460	470	0.	0.	0.
470	480	0.	0.	0.
480	490	0.	0.	0.
490	500	0.	0.	0.
500	510	0.	0.	0.
510	520	0.	0.	0.
520	530	0.	0.	0.
530	540	0.	0.	0.
540	550	0.	0.	0.
550	560	3.4000E-04	5.4471E-19	1.5220E 00
560	570	7.1500E-04	1.1455E-18	3.2584E 00
570	580	1.4750E-03	2.3631E-18	6.8407E 00
580	590	2.5250E-03	4.0453E-18	1.1914E 01
590	600	3.8000E-03	6.0880E-18	1.8237E 01
600	610	5.4000E-03	8.6513E-18	2.6351E 01
610	620	6.9000E-03	1.1054E-17	3.4227E 01
620	630	8.1000E-03	1.2977E-17	4.0833E 01
630	640	9.1000E-03	1.4579E-17	4.6608E 01
640	650	1.0000E-02	1.6021E-17	5.2024E 01
650	660	1.0650E-02	1.7062E-17	5.6265E 01
660	670	1.0900E-02	1.7463E-17	5.8464E 01
670	680	1.0900E-02	1.7463E-17	5.9344E 01
680	690	1.0650E-02	1.7062E-17	5.8842E 01
690	700	1.0150E-02	1.6261E-17	5.6898E 01
700	710	9.4000E-03	1.5060E-17	5.3452E 01
710	720	8.4000E-03	1.3458E-17	4.8443E 01
720	730	7.4000E-03	1.1856E-17	4.3273E 01
730	740	0.	0.	0.
SUM		1.2680E-01	2.0315E-16	6.7679E 02

TABLE. 10H. SPECTRAL EFFICIENCIES, $\eta_p^{\dagger}$, $\eta_p^{*\dagger}$, $\eta_{p,q}^{*\dagger}$, OF PHOSPHOR SCREEN V_{acc} = [illegible]0 kV

SPECTRAL INTERVAL Δ_i λ_1 to λ_2 $[10^{-9}\,m]$	P - 31		
	$\eta_p^{\dagger}$ $[W_{out}\,W_{el}^{-1}]$	$\eta_p^{*\dagger}$ [joules electron^{-1}]	$\eta_{p,q}^{*\dagger}$ [quanta electron^{-1}]
250 260	0.	0.	0.
260 270	0.	0.	0.
270 280	0.	0.	0.
280 290	0.	0.	0.
290 300	0.	0.	0.
300 310	0.	0.	0.
310 320	0.	0.	0.
320 330	0.	0.	0.
330 340	0.	0.	0.
340 350	0.	0.	0.
350 360	0.	0.	0.
360 370	0.	0.	0.
370 380	0.	0.	0.
380 390	3.1000E-04	4.9665E-19	9.6264E-01
390 400	5.6500E-04	9.0519E-19	1.8001E 00
400 410	1.1650E-03	1.8664E-18	3.8056E 00
410 420	2.3750E-03	3.8050E-18	7.9498E 00
420 430	4.4750E-03	7.1694E-18	1.5340E 01
430 440	7.2750E-03	1.1655E-17	2.5525E 01
440 450	9.7750E-03	1.5661E-17	3.5085E 01
450 460	1.1050E-02	1.7703E-17	4.0552E 01
460 470	1.0900E-02	1.7463E-17	4.0881E 01
470 480	1.0650E-02	1.7062E-17	4.0803E 01
480 490	1.2150E-02	1.9466E-17	4.7529E 01
490 500	1.5250E-02	2.4432E-17	6.0886E 01
500 510	1.9250E-02	3.0840E-17	7.8409E 01
510 520	2.2250E-02	3.5647E-17	9.2423E 01
520 530	2.2500E-02	3.6047E-17	9.5276E 01
530 540	2.1000E-02	3.3644E-17	9.0618E 01
540 550	1.7000E-02	2.7236E-17	7.4729E 01
550 560	1.2000E-02	1.9225E-17	5.3718E 01
560 570	8.5000E-03	1.3618E-17	3.8736E 01
570 580	6.0000E-03	9.6126E-18	2.7827E 01
580 590	4.2000E-03	6.7288E-18	1.9817E 01
590 600	2.8500E-03	4.5660E-18	1.3677E 01
600 610	1.9000E-03	3.0440E-18	9.2716E 00
610 620	1.3000E-03	2.0827E-18	6.4486E 00
620 630	9.2000E-04	1.4739E-18	4.6378E 00
630 640	6.4000E-04	1.0253E-18	3.2779E 00
640 650	4.6000E-04	7.3697E-19	2.3931E 00
650 660	3.3000E-04	5.2869E-19	1.7434E 00
660 670	2.4000E-04	3.8450E-19	1.2873E 00
670 680	0.	0.	0.
680 690	0.	0.	0.
690 700	0.	0.	0.
700 710	0.	0.	0.
710 720	0.	0.	0.
720 730	0.	0.	0.
730 740	0.	0.	0.
SUM	2.2728E-01	3.6413E-16	9.[illegible]41E 02

TABLE. II A. PHOTOCATHODE SENSITIVITY, $S^{\dagger}_{PC}$, AND CONVERSION EFFICIENCY, $\eta^{\dagger}_{PC}$, $\kappa^{\dagger}_{PC}$,

SPECTRAL INTERVAL Δ_i λ_1 to λ_2 $[10^{-9}\,m]$	S-1		
	$S^{\dagger}_{PC}$ $[AW^{-1}]$	$\eta^{\dagger}_{PC}$ [electrons quantum^{-1}]	$\kappa^{\dagger}_{PC}$ [quanta electron^{-1}]
250 260	0.	0.	0.
260 270	0.	0.	0.
270 280	0.	0.	0.
280 290	0.	0.	0.
290 300	0.	0.	0.
300 310	0.	0.	0.
310 320	1.2000E-03	4.7231E-03	2.1173E 02
320 330	1.9000E-03	7.2481E-03	1.3797E 02
330 340	2.5500E-03	9.4374E-03	1.0596E 02
340 350	3.1000E-03	1.1140E-02	8.9764E 01
350 360	3.4500E-03	1.2049E-02	8.2995E 01
360 370	3.4000E-03	1.1549E-02	8.6588E 01
370 380	2.9500E-03	9.7532E-03	1.0253E 02
380 390	2.3500E-03	7.5677E-03	1.3214E 02
390 400	1.7000E-03	5.3359E-03	1.8741E 02
400 410	1.1500E-03	3.5205E-03	2.8405E 02
410 420	7.3500E-04	2.1958E-03	4.5541E 02
420 430	5.2000E-04	1.5169E-03	6.5922E 02
430 440	4.5000E-04	1.2826E-03	7.7969E 02
440 450	4.2500E-04	1.1841E-03	8.4453E 02
450 460	4.1500E-04	1.1308E-03	8.8432E 02
460 470	4.1500E-04	1.1065E-03	9.0375E 02
470 480	4.2500E-04	1.1093E-03	9.0146E 02
480 490	4.5250E-04	1.1567E-03	8.6450E 02
490 500	4.9250E-04	1.2336E-03	8.1067E 02
500 510	5.3000E-04	1.3012E-03	7.6853E 02
510 520	5.7000E-04	1.3722E-03	7.2875E 02
520 530	6.1500E-04	1.4524E-03	6.8854E 02
530 540	6.6500E-04	1.5411E-03	6.4890E 02
540 550	7.2000E-04	1.6379E-03	6.1053E 02
550 560	7.8500E-04	1.7536E-03	5.7025E 02
560 570	8.5500E-04	1.8762E-03	5.3300E 02
570 580	9.2500E-04	1.9945E-03	5.0138E 02
580 590	1.0050E-03	2.1299E-03	4.6950E 02
590 600	1.1000E-03	2.2921E-03	4.3628E 02
600 610	1.1750E-03	2.4079E-03	4.1530E 02
610 620	1.2500E-03	2.5199E-03	3.9683E 02
620 630	1.3250E-03	2.6284E-03	3.8046E 02
630 640	1.4000E-03	2.7334E-03	3.6584E 02
640 650	1.5000E-03	2.8833E-03	3.4683E 02
650 660	1.6000E-03	3.0286E-03	3.3019E 02
660 670	1.6750E-03	3.1228E-03	3.2022E 02
670 680	1.7750E-03	3.2602E-03	3.0672E 02
680 690	1.8750E-03	3.3936E-03	2.9467E 02
690 700	1.9400E-03	3.4608E-03	2.8895E 02
700 710	2.0150E-03	3.5436E-03	2.8220E 02
710 720	2.0750E-03	3.5981E-03	2.7793E 02
720 730	2.1500E-03	3.6767E-03	2.7198E 02
730 740	2.2500E-03	3.7953E-03	2.6348E 02

TABLE I:A CONTINUED

SPECTRAL INTERVAL Δ_i λ_1 to λ_2 [10^{-9} m]		S - 1		
		S^i_{pc} [AW^{-1}]	η^i_{pc} [electrons quantum^{-1}]	κ^i_{pc} [quanta electron^{-1}]
730	740	2.2500E-03	3.7953E-03	2.6348E 02
740	750	2.3250E-03	3.8692E-03	2.5845E 02
750	760	2.3650E-03	3.8837E-03	2.5749E 02
760	770	2.3900E-03	3.6734E-03	2.5817E 02
770	780	2.4150E-03	3.8534E-03	2.5884E 02
780	790	2.4400E-03	3.8537E-03	2.5949E 02
790	800	2.4500E-03	3.8208E-03	2.6172E 02
800	810	2.4350E-03	3.7502E-03	2.6665E 02
810	820	2.4150E-03	3.6738E-03	2.7220E 02
820	830	2.4050E-03	3.6142E-03	2.7668E 02
830	840	2.3900E-03	3.5487E-03	2.8179E 02
840	850	2.3650E-03	3.4700E-03	2.8818E 02
850	860	2.3250E-03	3.3714E-03	2.9661E 02
860	870	2.2750E-03	3.2608E-03	3.0668E 02
870	880	2.2000E-03	3.1172E-03	3.2080E 02
880	890	2.1150E-03	2.9629E-03	3.3750E 02
890	900	2.0400E-03	2.8259E-03	3.5386E 02
900	910	1.9500E-03	2.6714E-03	3.7433E 02
910	920	1.8400E-03	2.4932E-03	4.0109E 02
920	930	1.7150E-03	2.2987E-03	4.3503E 02
930	940	1.6000E-03	2.1216E-03	4.7134E 02
940	950	1.4750E-03	1.9352E-03	5.1675E 02
950	960	1.3500E-03	1.7526E-03	5.7058E 02
960	970	1.2400E-03	1.5931E-03	6.2770E 02
970	980	1.1200E-03	1.4242E-03	7.0215E 02
980	990	1.0000E-03	1.2587E-03	7.9447E 02
990	1000	8.9000E-04	1.1090E-03	9.0173E 02
1000	1010	7.8750E-04	9.7150E-04	1.0293E 03
1010	1020	6.7750E-04	8.2756E-04	1.2084E 03
1020	1030	5.7250E-04	6.9243E-04	1.4441E 03
1030	1040	4.8750E-04	5.8397E-04	1.7124E 03
1040	1050	4.1750E-04	4.9533E-04	2.0188E 03
1050	1060	3.5750E-04	4.2013E-04	2.3802E 03
1060	1070	3.0500E-04	3.5506E-04	2.8164E 03
1070	1080	2.6000E-04	2.9986E-04	3.3349E 03
1080	1090	2.2000E-04	2.5139E-04	3.9779E 03

EFFECTIVE INTERVAL

310	1090		3.0251E-03	

TABLE. II B. PHOTOCATHODE SENSITIVITY, S^{t}_{PC}, AND CONVERSION EFFICIENCY, η^{t}_{PC}, κ^{t}_{PC}.

SPECTRAL INTERVAL Λ_i λ_1 to λ_2 [10^{-9} m]	S-20 S^{t}_{PC} [AW^{-1}]	η^{t}_{PC} [electrons quantum^{-1}]	κ^{t}_{PC} [quanta electron^{-1}]
250 260	0.	0.	0.
260 270	0.	0.	0.
270 280	0.	0.	0.
280 290	0.	0.	0.
290 300	0.	0.	0.
300 310	1.3500E-02	5.4877E-02	1.8223E 01
310 320	2.4000E-02	9.4462E-02	1.0586E 01
320 330	3.1500E-02	1.2017E-01	8.3218E 00
330 340	3.8500E-02	1.4249E-01	7.0182E 00
340 350	4.3500E-02	1.5632E-01	6.3970E 00
350 360	4.7500E-02	1.6589E-01	6.0281E 00
360 370	5.2500E-02	1.7833E-01	5.6076E 00
370 380	5.7500E-02	1.9010E-01	5.2603E 00
380 390	6.0500E-02	1.9483E-01	5.1327E 00
390 400	6.2250E-02	1.9539E-01	5.1180E 00
400 410	6.4250E-02	1.9669E-01	5.0842E 00
410 420	6.5500E-02	1.9568E-01	5.1103E 00
420 430	6.6000E-02	1.9254E-01	5.1938E 00
430 440	6.5000E-02	1.8526E-01	5.3978E 00
440 450	6.3500E-02	1.7692E-01	5.6524E 00
450 460	6.2250E-02	1.6962E-01	5.8954E 00
460 470	5.9750E-02	1.5931E-01	6.2771E 00
470 480	5.7250E-02	1.4943E-01	6.6921E 00
480 490	5.6000E-02	1.4315E-01	6.9855E 00
490 500	5.4250E-02	1.3588E-01	7.3595E 00
500 510	5.2000E-02	1.2766E-01	7.8331E 00
510 520	4.9750E-02	1.1977E-01	8.3494E 00
520 530	4.7750E-02	1.1276E-01	8.[illegible]31E 00
530 540	4.5750E-02	1.0602E-01	9.4321E 00
540 550	4.3500E-02	9.8958E-02	1.0105E 01
550 560	4.1500E-02	9.2707E-02	1.0787E 01
560 570	4.0000E-02	8.7774E-02	1.1393E 01
570 580	3.8000F-02	8.1935E-02	1.2205E 01
580 590	3.5500E-02	7.5237E-02	1.3291E 01
590 600	3 3500E-02	6.9805E-02	1.4326E 01
600 610	3.1750E-02	6.5065E-02	1.5369E 01
610 620	3.0000E-02	6.0479E-02	1.6535E 01
620 630	2.8000E-02	5.5544E-02	1.8004E 01
630 640	2.6000E-02	5.0764E-02	1.9699E 01
640 650	2.4000E-02	4.6133E-02	2.1677E 01
650 660	2.2000E-02	4.1643E-02	2.4014E 01
660 670	1.9850E-02	3.7008E-02	2.7021E 01
670 680	1.7850E-02	3.2786E-02	3.0501E 01
680 690	1.6150E-02	2.9231E-02	3.4211E 01
690 700	1.4250E-02	2.542[illegible]E-02	3.9338E 01
700 710	1.2350E-02	2.[illegible]719[illegible]-02	4.6043E 01
710 720	1.0850E-02	1.8814E-02	5.3152E 01
720 730	9.2500E-03	1.58[illegible]3E-02	6.3218E 01
[illegible] 740	7.7000E-03	1.2[illegible]89E-02	7.6991E 01

TABLE IIB. CONTINUED

SPECTRAL INTERVAL Δ_i λ_1 to λ_2 [10^{-9}m]		S-20		
		$s^{\dagger}_{PC}$ [AW^{-1}]	$\eta^{\dagger}_{PC}$ [electrons quantum^{-1}]	$\kappa^{\dagger}_{PC}$ [quanta electron^{-1}]
730	740	7.7000E-03	1.2989E-02	7.6991E 01
740	750	6.4000E-03	1.0651E-02	9.3890E 01
750	760	5.1000E-03	8.3749E-03	1.1940E 02
760	770	4.0500E-03	6.5637E-03	1.5235E 02
770	780	3.1000E-03	4.9593E-03	2.0164E 02
780	790	2.2500E-03	3.5536E-03	2.8140E 02
790	800	1.6500E-03	2.5732E-03	3.8862E 02
800	810	0.	0.	0.
810	820	0.	0.	0.
820	830	0.	0.	0.
830	840	0.	0.	0.
840	850	0.	0.	0.
850	860	0.	0.	0.
860	870	0.	0.	0.
870	880	0.	0.	0.
880	890	0.	0.	0.
890	900	0.	0.	0.
900	910	0.	0.	0.
910	920	0.	0.	0.
920	930	0.	0.	0.
930	940	0.	0.	0.
940	950	0.	0.	0.
950	960	0.	0.	0.
960	970	0.	0.	0.
970	980	0.	0.	0.
980	990	0.	0.	0.
990	1000	0.	0.	0.
1000	1010	0.	0.	0.
1010	1020	0.	0.	0.
1020	1030	0.	0.	0.
1030	1040	0.	0.	0.
1040	1050	0.	0.	0.
1050	1060	0.	0.	0.
1060	1070	0.	0.	0.
1070	1080	0.	0.	0.
1080	1090	0.	0.	0.

EFFECTIVE INTERVAL

300	800		9.4401E-02	

TABLE. II C. PHOTOCATHODE SENSITIVITY, $S^{\dagger}_{PC}$, AND CONVERSION EFFICIENCY, $\eta^{\dagger}_{PC}$, $\kappa^{\dagger}_{PC}$.

SPECTRAL INTERVAL Δ_i λ_1 to λ_2 [10^{-9} m]		S-20R		
		$S^{\dagger}_{PC}$ [AW^{-1}]	$\eta^{\dagger}_{PC}$ [electrons quantum^{-1}]	$\kappa^{\dagger}_{PC}$ [quanta electron^{-1}]
250	260	0.	0.	0.
260	270	0.	0.	0.
270	280	0.	0.	0.
280	290	0.	0.	0.
290	300	0.	0.	0.
300	310	1.3500E-02	5.4877E-02	1.8223E 01
310	320	2.4000E-02	9.4462E-02	1.0586E 01
320	330	3.1500E-02	1.2017E-01	8.3218E 00
330	340	3.8500E-02	1.4249E-01	7.0182E 00
340	350	4.3500E-02	1.5632E-01	6.3970E 00
350	360	4.7500E-02	1.6589E-01	6.0281E 00
360	370	5.2500E-02	1.7833E-01	5.6076E 00
370	380	5.7500E-02	1.9010E-01	5.2603E 00
380	390	6.0500E-02	1.9483E-01	5.1327E 00
390	400	6.2250E-02	1.9539E-01	5.1180E 00
400	410	6.4250E-02	1.9669E-01	5.0842E 00
410	420	6.5500E-02	1.9568E-01	5.1103E 00
420	430	6.6000E-02	1.9254E-01	5.1938E 00
430	440	6.5000E-02	1.8526E-01	5.3978E 00
440	450	6.3500E-02	1.7692E-01	5.6524E 00
450	460	6.2250E-02	1.6962E-01	5.8954E 00
460	470	5.9750E-02	1.5931E-01	6.2771E 00
470	480	5.7250E-02	1.4943E-01	6.6921E 00
480	490	5.6000E-02	1.4315E-01	6.9855E 00
490	500	5.4250E-02	1.3588E-01	7.3595E 00
500	510	5.3500E-02	1.3135E-01	7.6134E 00
510	520	5.3000E-02	1.2759E-01	7.8375E 00
520	530	5.1000E-02	1.2044E-01	8.3030E 00
530	540	4.9000E-02	1.1355E-01	8.8065E 00
540	550	4.6500E-02	1.0578E-01	9.4534E 00
550	560	4.4000E-02	9.8292E-02	1.0174E 01
560	570	4.2500E-02	9.3260E-02	1.0723E 01
570	580	4.1000E-02	8.8404E-02	1.1312E 01
580	590	3.8500E-02	8.1595E-02	1.2256E 01
590	600	3.6000E-02	7.5014E-02	1.3331E 01
600	610	3.4500E-02	7.0700E-02	1.4144E 01
610	620	3.3000E-02	6.6527E-02	1.5032E 01
620	630	3.1000E-02	6.1495E-02	1.6262E 01
630	640	2.9250E-02	5.7110E-02	1.7510E 01
640	650	2.7250E-02	5.2380E-02	1.9091E 01
650	660	2.5000E-02	4.7321E-02	2.1132E 01
660	670	2.3750E-02	4.4279E-02	2.2584E 01
670	680	2.2750E-02	4.1786E-02	2.3931E 01
680	690	2.1000E-02	3.8009E-02	2.6310E 01
690	700	1.9000E-02	3.3894E-02	2.9504E 01
700	710	1.7500E-02	3.0776E-02	3.2493E 01
710	720	1.6000E-02	2.7744E-02	3.6044E 01
720	730	1.4250E-02	2.4369E-02	4.1036E 01
730	740	1.2750E-02	2.1507E-02	4.6497E 01

TABLE IIC. CONTINUED

SPECTRAL INTERVAL Δ_i λ_1 to λ_2 $[10^{-9}m]$		S-20R		
		$S^{\dagger}_{PC}$ $[AW^{-1}]$	$\eta^{\dagger}_{PC}$ [electrons quantum^{-1}]	$\kappa^{\dagger}_{PC}$ [quanta electron^{-1}]
730	740	1.2750E-02	2.1507E-02	4.6497E 01
740	750	1.1500F-02	1.9138E-02	5.2252E 01
750	760	1.0450 -02	1.7160E-02	5.8274E 01
760	770	9.3500E-03	1.5153E-02	6.5992E 01
770	780	8.3000E-03	1.3278E-02	7.5313E 01
780	790	7.3000E-03	1.1529E-02	8.6734E 01
790	800	6.3000E-03	9.8249E-03	1.0178E 02
800	810	5.4000E-03	8.3168E-03	1.2024E 02
810	820	4.5000E-03	6.8456E-03	1.4608E 02
820	830	3.6000E-03	5.4101E-03	1.8484E 02
830	840	2.8500E-03	4.2317E-03	2.3631E 02
840	850	2.1500E-03	3.1546E-03	3.1700E 02
850	860	1.5500E-03	2.2476E-03	4.4492E 02
860	870	1.0500E-03	1.5050E-03	6.6446E 02
870	880	6.5000E-04	9.2100E-04	1.0858E 03
880	890	0.	0.	0.
890	900	0.	0.	0.
900	910	0.	0.	0.
910	920	0.	0.	0.
920	930	0.	[illegible]	0.
930	940	0.	0.	0.
940	950	0.	0.	0.
950	960	0.	0.	0.
960	970	0.	0.	0.
970	980	0.	0.	0.
980	990	0	0.	0.
990	1000	C.	0.	0.
1000	1010	0	0.	0.
1010	1020	0.	0.	0.
1020	1030	0.	0.	0.
1030	1040	0.	0.	0.
1040	1050	0.	0.	0.
1050	1060	0.	0.	0.
1060	1070	0.	0.	0.
1070	1080	0.	0.	0.
1080	1090	0.	0.	0.

EFFECTIVE INTERVAL

300	880		8.5676E-02	

TABLE. II D. PHOTOCATHODE SENSITIVITY, S^{t}_{PC}, AND CONVERSION EFFICIENCY, η^{t}_{PC}, κ^{t}_{PC}.

SPECTRAL INTERVAL Δ_i λ_1 to λ_2 [10^{-9} m]	S-25		
	S^{t}_{PC} [AW^{-1}]	η^{t}_{PC} [electrons quantum^{-1}]	κ^{t}_{PC} [quanta electron^{-1}]
250 260	0.	0.	0.
260 270	0.	0.	0.
270 280	0.	0.	0.
280 290	0.	0.	0.
290 300	0.	0.	0.
300 310	1.1000E-02	4.4715E-02	2.2364E 01
310 320	1.8000E-02	7.0846E-02	1.4115E 01
320 330	2.3000E-02	8.7741E-02	1.1397E 01
330 340	2.7000E-02	9.9925E-02	1.0007E 01
340 350	3.0000E-02	1.0781E-01	9.2756E 00
350 360	3.3000E-02	1.1525E-01	8.6768E 00
360 370	3.6000E-02	1.2228E-01	8.1778E 00
370 380	3.7500E-02	1.2398E-01	8.0657E 00
380 390	3.8500E-02	1.2398E-01	8.0657E 00
390 400	4.0000E-02	1.2555E-01	7.9649E 00
400 410	4.2000E-02	1.2857E-01	7.7777E 00
410 420	4.3250E-02	1.2921E-01	7.7394E 00
420 430	4.3750E-02	1.2763E-01	7.8353E 00
430 440	4.3750E-02	1.2469E-01	8.0196E 00
440 450	4.3250E-02	1.2050E-01	8.2988E 00
450 460	4.2500E-02	1.1581E-01	8.6351E 00
460 470	4.1750E-02	1.1132E-01	8.9834E 00
470 480	4.1250E-02	1.0767E-01	9.2878E 00
480 490	4.0500E-02	1.0353E-01	9.6590E 00
490 500	3.9500E-02	9.8935E-02	1.0108E 01
500 510	3.8500E-02	9.4520E-02	1.0580E 01
510 520	3.7750E-02	9.0880E-02	1.1004E 01
520 530	3.7250E-02	8.7968E-02	1.1368E 01
530 540	3.6500E-02	8.4585E-02	1.1822E 01
540 550	3.5500E-02	8.0758E-02	1.2383E 01
550 560	3.4600E-02	7.7293E-02	1.2938E 01
560 570	3.3900E-02	7.4389E-02	1.3443E 01
570 580	3.3200E-02	7.1586E-02	1.3969E 01
580 590	3.2400E-02	6.8667E-02	1.4563E 01
590 600	3.1600E-02	6.5846E-02	1.5187E 01
600 610	3.0700E-02	6.2913E-02	1.5895E 01
610 620	2.9600E-02	5.9672E-02	1.6758E 01
620 630	2.8500E-02	5.6535E-02	1.7688E 01
630 640	2.7500E-02	5.3693E-02	1.8625E 01
640 650	2.6750E-02	5.1419E-02	1.9448E 01
650 660	2.6000E-02	4.9214E-02	2.0319E 01
660 670	2.5250E-02	4.7076E-02	2.1242E 01
670 680	2.4500E-02	4.5001E-02	2.2222E 01
680 690	2.3250E-02	4.2081E-02	2.3764E 01
690 700	2.2000E-02	3.9246E-02	2.5480E 01
700 710	2.1000E-02	3.6931E-02	2.7078E 01
710 720	2.0000E-02	3.4680E-02	2.8835E 01
720 730	1.9000E-02	3.2492E-02	3.0777E 01
730 740	1.8250E-02	3.0784E-02	3.2484E 01

TABLE. IID. CONTINUED

SPECTRAL INTERVAL Δ_i λ_1 to λ_2		S-25		
		$s^{\dagger}_{PC}$	$\eta^{\dagger}_{PC}$	$\kappa^{\dagger}_{PC}$
[10^{-9} m]		[AW^{-1}]	[electrons quantum^{-1}]	[quanta electron^{-1}]
730	740	1.8250E-02	3.0784E-02	3.2484E 01
740	750	1.7500E-02	2.9123E-02	3.4337E 01
750	760	1.6500E-02	2.7095E-02	3.6907E 01
760	770	1.5500E-02	2.5120E-02	3.9808E 01
770	780	1.4500E-02	2.3197E-02	4.3110E 01
780	790	1.3500E-02	2.1322E-02	4.6901E 01
790	800	1.2000E-02	1.8714E-02	5.3435E 01
800	810	1.0750E-02	1.6557E-02	6.0399E 01
810	820	1.0000E-02	1.5212E-02	6.5736E 01
820	830	9.0000E-03	1.3525E-02	7.3936E 01
830	840	8.0000E-03	1.1878E-02	8.4186E 01
840	850	7.0500E-03	1.0344E-02	9.6674E 01
850	860	6.2000E-03	8.9905E-03	1.1123E 02
860	870	5.5000E-03	7.8832E-03	1.2685E 02
870	880	4.8000E-03	6.8013E-03	1.4703E 02
880	890	4.1000E-03	5.7438E-03	1.7410E 02
890	900	3.5000E-03	4.8484E-03	2.0625E 02
900	910	2.9500E-03	4.0414E-03	2.4744E 02
910	920	2.4500E-03	3.3197E-03	3.0123E 02
920	930	2.0500E-03	2.7477E-03	3.6394E 02
930	940	1.7000E-03	2.2542E-03	4.4362E 02
940	950	1.3000E-03	1.7056E-03	5.8632E 02
950	960	9.5000E-04	1.2333E-03	8.1082E 02
960	970	6.5000E-04	8.3511E-04	1.1975E 03
970	980	4.0000E-04	5.0864E-04	1.9660E 03
980	990	0.	0.	0.
990	1000	0.	0.	0.
1000	1010	0.	0.	0.
1010	1020	0.	0.	0.
1020	1030	0.	0.	0.
1030	1040	0.	0.	0.
1040	1050	0.	0.	0.
1050	1060	0.	0.	0.
1060	1070	0.	0.	0.
1070	1080	0.	0.	0.
1080	1090	0.	0.	0.

EFFECTIVE INTERVAL

300	980		5.7223E-02	

TABLE. II E. PHOTOCATHODE SENSITIVITY, $S^{\dagger}_{PC}$, AND CONVERSION EFFICIENCY, $\eta^{\dagger}_{PC}$, $\kappa^{\dagger}_{PC}$.

SPECTRAL INTERVAL Δ_i λ_1 to λ_2 [10^{-9} m]	S-25HI		
	$S^{\dagger}_{PC}$ [AW^{-1}]	$\eta^{\dagger}_{PC}$ [electrons quantum^{-1}]	$\kappa^{\dagger}_{PC}$ [quanta electron^{-1}]
250 260	0.	0.	0.
260 270	0.	0.	0.
270 280	0.	0.	0.
280 290	0.	0.	0.
290 300	0.	0.	0.
300 310	0.	0.	0.
310 320	0.	0.	0.
320 330	0.	0.	0.
330 340	0.	0.	0.
340 350	0.	0.	0.
350 360	0.	0.	0.
360 370	0.	0.	0.
370 380	0.	0.	0.
380 390	0.	0.	0.
390 400	0.	0.	0.
400 410	0.	0.	0.
410 420	0.	0.	0.
420 430	0.	0.	0.
430 440	5.0500E-02	1.4393E-01	6.9477E 00
440 450	4.7250E-02	1.3164E-01	7.5963E 00
450 460	4.4250E-02	1.2058E-01	8.2936E 00
460 470	4.2250E-02	1.1265E-01	8.8771E 00
470 480	4.1000E-02	1.0702E-01	9.3444E 00
480 490	4.0350E-02	1.0315E-01	9.6949E 00
490 500	4.0100E-02	1.0044E-01	9.9565E 00
500 510	4.1000E-02	1.0066E-01	9.9346E 00
510 520	4.3750E-02	1.0532E-01	9.4945E 00
520 530	4.6500E-02	1.0981E-01	9.1065E 00
530 540	4.7750E-02	1.1066E-01	9.0370E 00
540 550	4.8000E-02	1.0919E-01	9.1580E 00
550 560	4.8000E-02	1.0723E-01	9.3260E 00
560 570	4.7750E-02	1.0478E-01	9.5437E 00
570 580	4.6250E-02	9.9724E-02	1.0028E 01
580 590	4.4000E-02	9.3251E-02	1.0724E 01
590 600	4.2500E-02	8.8558E-02	1.1292E 01
600 610	4.1100E-02	8.4225E-02	1.1873E 01
610 620	3.9250E-02	7.9126E-02	1.2638E 01
620 630	3.7400E-02	7.4190E-02	1.3479E 01
630 640	3.6050E-02	7.0386E-02	1.4207E 01
640 650	3.5300E-02	6.7853E-02	1.4738E 01
650 660	3.4700E-02	6.5682E-02	1.5225E 01
660 670	3.3900E-02	6.3203E-02	1.5822E 01
670 680	3.2850E-02	6.0338E-02	1.6573E 01
680 690	3.1750E-02	5.7466E-02	1.7402E 01
690 700	3.0600E-02	5.4587E-02	1.8319E 01
700 710	2.9000E-02	5.0999E-02	1.9608E 01
710 720	2.7100E-02	4.6992E-02	2.1280E 01
720 730	2.4900E-02	4.2581E-02	2.3485E 01
730 740	2.3050E-02	3.8881E-02	2.5719E 01

TABLE. IIE. CONTINUED

SPECTRAL INTERVAL Δ_i λ_1 to λ_2 [10^{-9} m]		S-25HI $S^{\dagger}_{PC}$ [A W^{-1}]	S-25HI $\eta^{\dagger}_{PC}$ [electrons quantum^{-1}]	S-25HI $\kappa^{\dagger}_{PC}$ [quanta electron^{-1}]
730	740	2.3050E-02	3.8881E-02	2.5719E 01
740	750	2.2000E-02	3.6612E-02	2.7313E 01
750	760	2.0950E-02	3.4403E-02	2.9067E 01
760	770	2.0050E-02	3.2494E-02	3.0774E 01
770	780	1.9350E-02	3.0955E-02	3.2305E 01
780	790	1.8700E-02	2.9534E-02	3.3859E 01
790	800	1.8000E-02	2.8071E-02	3.5624E 01
800	810	1.6800E-02	2.5874E-02	3.8648E 01
810	820	1.5500E-02	2.3579E-02	4.2410E 01
820	830	1.4250E-02	2.1415E-02	4.6696E 01
830	840	1.2750E-02	1.8931E-02	5.2823E 01
840	850	1.1250E-02	1.6506E-02	6.0583E 01
850	860	9.8500E-03	1.4283E-02	7.0012E 01
860	870	8.4500E-03	1.2111E-02	8.2566E 01
870	880	6.9000E-03	9.7768E-03	1.0228E 02
880	890	5.2000E-03	7.2848E-03	1.3727E 02
890	900	3.1500E-03	4.3636E-03	2.2917E 02
900	910	0.	0.	0.
910	920	0.	0.	0.
920	930	0.	0.	0.
930	940	0.	0.	0.
940	950	0.	0.	0.
950	960	0.	0.	0.
960	970	0.	0.	0.
970	980	0.	0.	0.
980	990	0.	0.	0.
990	1000	0.	0.	0.
1000	1010	0.	0.	0.
1010	1020	0.	0.	0.
1020	1030	0.	0.	0.
1030	1040	0.	0.	0.
1040	1050	0.	0.	0.
1050	1060	0.	0.	0.
1060	1070	0.	0.	0.
1070	1080	0.	0.	0.
1080	1090	0.	0.	0.

EFFECTIVE INTERVAL

430	900		6.4921E-02	

TABLE. II F. PHOTOCATHODE SENSITIVITY, $S^{\dagger}_{PC}$, AND CONVERSION EFFICIENCY, $\eta^{\dagger}_{PC}$, $\kappa^{\dagger}_{PC}$.

SPECTRAL INTERVAL Δ_i λ_1 to λ_2 [10^{-9} m]		VARO $S^{\dagger}_{PC}$ [AW^{-1}]	VARO $\eta^{\dagger}_{PC}$ [electrons quantum^{-1}]	VARO $\kappa^{\dagger}_{PC}$ [quanta electron^{-1}]
250	260	0.	0.	0.
260	270	0.	0.	0.
270	280	0.	0.	0.
280	290	0.	0.	0.
290	300	0.	0.	0.
300	310	0.	0.	0.
310	320	0.	0.	0.
320	330	0.	0.	0.
330	340	0.	0.	0.
340	350	0.	0.	0.
350	360	0.	0.	0.
360	370	0.	0.	0.
370	380	0.	0.	0.
380	390	0.	0.	0.
390	400	0.	0.	0.
400	410	5.0000E-03	1.5306E-02	6.5332E 01
410	420	6.9000E-03	2.0614E-02	4.8511E 01
420	430	9.0000E-03	2.6255E-02	3.8088E 01
430	440	1.1500E-02	3.2777E-02	3.0510E 01
440	450	1.4500E-02	4.0398E-02	2.4753E 01
450	460	1.8000E-02	4.9048E-02	2.0388E 01
460	470	2.2000E-02	5.8658E-02	1.7048E 01
470	480	2.5000E-02	6.5253E-02	1.5325E 01
480	490	2.7500E-02	7.0299E-02	1.4225E 01
490	500	3.0500E-02	7.6393E-02	1.3090E 01
500	510	3.3000E-02	8.1018E-02	1.2343E 01
510	520	3.5000E-02	8.4259E-02	1.1868E 01
520	530	3.7000E-02	8.7377E-02	1.1445E 01
530	540	3.8500E-02	8.9220E-02	1.1208E 01
540	550	3.9500E-02	8.9858E-02	1.1129E 01
550	560	4.0250E-02	8.9914E-02	1.1122E 01
560	570	4.0750E-02	8.9420E-02	1.1183E 01
570	580	4.1250E-02	8.8943E-02	1.1243E 01
580	590	4.1750E-02	8.8482E-02	1.1302E 01
590	600	4.2250E-02	8.8037E-02	1.1359E 01
600	610	4.2750E-02	8.7607E-02	1.1415E 01
610	620	4.3250E-02	8.7190E-02	1.1469E 01
620	630	4.3750E-02	8.6787E-02	1.1522E 01
630	640	4.4250E-02	8.6396E-02	1.1575E 01
640	650	4.4750E-02	8.6018E-02	1.1625E 01
650	660	4.5250E-02	8.5651E-02	1.1675E 01
660	670	4.5750E-02	8.5295E-02	1.1724E 01
670	680	4.6250E-02	8.4950E-02	1.1772E 01
680	690	4.6750E-02	8.4615E-02	1.1818E 01
690	700	4.7500E-02	8.4735E-02	1.1801E 01
700	710	4.8500E-02	8.5292E-02	1.1724E 01
710	720	4.9500E-02	8.5833E-02	1.1650E 01
720	730	5.0000E-02	8.5504E-02	1.1695E 01
730	740	5.0000E-02	8.4341E-02	1.1857E 01

TABLE. II F. CONTINUED.

SPECTRAL INTERVAL Λ_i λ_1 to λ_2 [10^{-9} m]		VARO		
		$S^{\dagger}_{PC}$ [AW^{-1}]	$\eta^{\dagger}_{PC}$ [electrons quantum^{-1}]	$\kappa^{\dagger}_{PC}$ [quanta electron^{-1}]
730	740	5.0000E-02	8.4341E-02	1.1857E 01
740	750	5.0000E-02	8.3209E-02	1.2018E 01
750	760	5.0000E-02	8.2107E-02	1.2179E 01
760	770	4.9500E-02	8.0227E-02	1.2465E 01
770	780	4.8500E-02	7.7568E-02	1.2889E 01
780	790	4.8000E-02	7.5810E-02	1.3191E 01
790	800	4.7750E-02	7.4467E-02	1.3429E 01
800	810	4.7500E-02	7.3157E-02	1.3669E 01
810	820	4.6750E-02	7.1118E-02	1.4061E 01
820	830	4.5250E-02	6.8002E-02	1.4705E 01
830	840	4.2750E-02	6.3475E-02	1.5754E 01
840	850	3.9000E-02	5.7222E-02	1.7476E 01
850	860	3.2500E-02	4.7127E-02	2.1219E 01
860	870	2.2750E-02	3.2608E-02	3.0668E 01
870	880	1.5500E-02	2.1962E-02	4.5532E 01
880	890	1.1250E-02	1.5760E-02	6.3450E 01
890	900	6.2500E-03	8.6579E-03	1.1550E 02
900	910	2.5000E-03	3.4249E-03	2.9198E 02
910	920	1.1000E-03	1.4905E-03	6.7092E 02
920	930	4.5000E-04	6.0315E-04	1.6580E 03
930	940	0.	0.	0.
940	950	0.	0.	0.
950	960	0.	0.	0.
960	970	0.	0.	0.
970	980	0.	0.	0.
980	990	0.	0.	0.
990	1000	0.	0.	0.
1000	1010	0.	0.	0.
1010	1020	0.	0.	0.
1020	1030	0.	0.	0.
1030	1040	0.	0.	0.
1040	1050	0.	0.	0.
1050	1060	0.	0.	0.
1060	1070	0.	0.	0.
1070	1080	0.	0.	0.
1080	1090	0.	0.	0.

EFFECTIVE INTERVAL

400	930		6.5467E-02	

TABLE. II G. PHOTOCATHODE SENSITIVITY, $S^{\dagger}_{PC}$, AND CONVERSION EFFICIENCY, $\eta^{\dagger}_{PC}$, $\kappa^{\dagger}_{PC}$.

SPECTRAL INTERVAL Δ_i λ_1 to λ_2 [10^{-9}m]	S-4		
	$S^{\dagger}_{PC}$ [AW^{-1}]	$\eta^{\dagger}_{PC}$ [electrons quantum^{-1}]	$\kappa^{\dagger}_{PC}$ [quanta electron^{-1}]
250 260	0.	0.	0.
260 270	0.	0.	0.
270 280	0.	0.	0.
280 290	0.	0.	0.
290 300	0.	0.	0.
300 310	0.	0.	0.
310 320	1.5500E-02	6.1007E-02	1.6392E 01
320 330	2.5500E-02	9.7270E-02	1.0280E 01
330 340	3.1750E-02	1.1750E-01	8.5103E 00
340 350	3.4500E-02	1.2398E-01	8.0657E 00
350 360	3.6500E-02	1.2747E-01	7.8448E 00
360 370	3.8250E-02	1.2993E-01	7.6967E 00
370 380	3.9750E-02	1.3142E-01	7.6092E 00
380 390	4.0850E-02	1.3155E-01	7.6017E 00
390 400	4.1350E-02	1.2979E-01	7.7049E 00
400 410	4.1500E-02	1.2704E-01	7.8714E 00
410 420	4.1350E-02	1.2353E-01	8.0950E 00
420 430	4.1100E-02	1.1990E-01	8.3405E 00
430 440	4.0750E-02	1.1614E-01	8.6100E 00
440 450	4.0000E-02	1.1144E-01	8.9731E 00
450 460	3.9000E-02	1.0627E-01	9.4100E 00
460 470	3.7750E-02	1.0065E-01	9.9353E 00
470 480	3.6250E-02	9.4617E-02	1.0569E 01
480 490	3.4500E-02	8.8193E-02	1.1339E 01
490 500	3.2250E-02	8.0776E-02	1.2380E 01
500 510	2.9750E-02	7.3039E-02	1.3691E 01
510 520	2.7750E-02	6.6805E-02	1.4969E 01
520 530	2.5500E-02	6.0220E-02	1.6606E 01
530 540	2.2750E-02	5.2721E-02	1.8968E 01
540 550	2.0000E-02	4.5498E-02	2.1979E 01
550 560	1.7250E-02	3.8535E-02	2.5951E 01
560 570	1.4750E-02	3.2367E-02	3.0896E 01
570 580	1.2250E-02	2.6413E-02	3.7860E 01
580 590	9.9000E-03	2.0981E-02	4.7661E 01
590 600	7.7000E-03	1.6045E-02	6.2326E 01
600 610	5.6500E-03	1.1578E-02	8.6368E 01
610 620	3.9000E-03	7.8622E-03	1.2719E 02
620 630	2.6000E-03	5.1576E-03	1.9389E 02
630 640	1.7500E-03	3.4168E-03	2.9267E 02
640 650	0.	0.	0.
650 660	0.	0.	0.
660 670	0.	0.	0.
670 680	0.	0.	0.
680 690	0.	0.	0.
690 700	0.	0.	0.
700 710	0.	0.	0.
710 720	0.	0.	0.
720 730	0.	0.	0.
730 740	0.	0.	0.

EFFECTIVE INTERVAL

310 640 | 7.8156E-02

TABLE. II H. PHOTOCATHODE SENSITIVITY, $S^{\dagger}_{PC}$, AND CONVERSION EFFICIENCY, $\eta^{\dagger}_{PC}$, $\kappa^{\dagger}_{PC}$

SPECTRAL INTERVAL Δ_i λ_1 to λ_2 $[10^{-9}\,m]$	S-11		
	$S^{\dagger}_{PC}$ $[AW^{-1}]$	$\eta^{\dagger}_{PC}$ [electrons quantum^{-1}]	$\kappa^{\dagger}_{PC}$ [quanta electron^{-1}]
250 260	0.	0.	0.
260 270	0.	0.	0.
270 280	0.	0.	0.
280 290	0.	0.	0.
290 300	0.	0.	0.
300 310	0.	0.	0.
310 320	0.	0.	0.
320 330	6.0500E-03	2.3080E-02	4.3328E 01
330 340	1.5400E-02	5.6994E-02	1.7546E 01
340 350	2.6500E-02	9.5232E-02	1.0501E 01
350 360	3.4000E-02	1.1874E-01	8.4216E 00
360 370	3.9000E-02	1.3247E-01	7.5487E 00
370 380	4.2000E-02	1.3886E-01	7.2015E 00
380 390	4.3500E-02	1.4008E-01	7.1386E 00
390 400	4.5000E-02	1.4124E-01	7.0799E 00
400 410	4.6500E-02	1.4235E-01	7.0250E 00
410 420	4.7500E-02	1.4191E-01	7.0469E 00
420 430	4.8500E-02	1.4148E-01	7.0679E 00
430 440	4.9000E-02	1.3966E-01	7.1604E 00
440 450	4.9000E-02	1.3652E-01	7.3250E 00
450 460	4.8500E-02	1.3216E-01	7.5648E 00
460 470	4.7500E-02	1.2665E-01	7.8959E 00
470 480	4.6500E-02	1.2137E-01	8.2392E 00
480 490	4.5000E-02	1.1503E-01	8.6931E 00
490 500	4.3000E-02	1.0770E-01	9.2850E 00
500 510	4.0500E-02	9.9431E-02	1.0057E 01
510 520	3.7500E-02	9.0278E-02	1.1077E 01
520 530	3.5000E-02	8.2654E-02	1.2099E 01
530 540	3.2500E-02	7.5316E-02	1.3277E 01
540 550	2.9000E-02	6.5972E-02	1.5158E 01
550 560	2.5000E-02	5.5847E-02	1.7906E 01
560 570	2.1250E-02	4.6630E-02	2.1445E 01
570 580	1.8000E-02	3.8812E-02	2.5766E 01
580 590	1.4750E-02	3.1260E-02	3.1990E 01
590 600	1.1500E-02	2.3963E-02	4.1731E 01
600 610	8.4000E-03	1.7214E-02	5.8092E 01
610 620	5.6000E-03	1.1289E-02	8.8579E 01
620 630	3.6000E-03	7.1413E-03	1.4003E 02
630 640	2.2000E-03	4.2954E-03	2.3281E 02
640 650	1.2500E-03	2.4027E-03	4.1619E 02
650 660	7.5000E-04	1.4196E-03	7.0441E 02
660 670	5.0000E-04	9.3219E-04	1.0727E 03
670 680	6.7000E-04	1.2306E-03	8.1259E 02
680 690	7.7000E-04	1.3937E-03	7.1754E 02
690 700	4.4000E-04	7.8492E-04	1.2740E 03
700 710	2.5500E-04	4.4844E-04	2.2299E 03
710 720	2.1000E-04	3.6414E-04	2.7462E 03
720 730	0.	0.	0.
730 740	0.	0.	0.

EFFECTIVE INTERVAL

[illegible] [illegible]

TABLE. III. PHOTOCATHODE SENSITIVITY, $S^{\dagger}_{PC}$, AND CONVERSION EFFICIENCY, $\eta^{\dagger}_{PC}$, $\kappa^{\dagger}_{PC}$

SPECTRAL INTERVAL Δ_i λ_1 to λ_2	S-17		
	$S^{\dagger}_{PC}$	$\eta^{\dagger}_{PC}$	$\kappa^{\dagger}_{PC}$
$[10^{-9}$ m$]$	$[AW^{-1}]$	[electrons quantum^{-1}]	[quanta electron^{-1}]
250 260	0.	0.	0.
260 270	0.	0.	0.
270 280	0.	0.	0.
280 290	1.2600E-02	5.4813E-02	1.8244E 01
290 300	2.5000E-02	1.0507E-01	9.5176E 00
300 310	3.8500E-02	1.5650E-01	6.3897E 00
310 320	4.9000E-02	1.9286E-01	5.1851E 00
320 330	5.8000E-02	2.2126E-01	4.5196E 00
330 340	6.3500E-02	2.3501E-01	4.2551E 00
340 350	6.6500E-02	2.3898E-01	4.1845E 00
350 360	6.9000E-02	2.4098E-01	4.1498E 00
360 370	7.0500E-02	2.3947E-01	4.1759E 00
370 380	7.1000E-02	2.3474E-01	4.2601E 00
380 390	7.1500E-02	2.3025E-01	4.3431E 00
390 400	7.2500E-02	2.2756E-01	4.3944E 00
400 410	7.3500E-02	2.2500E-01	4.4444E 00
410 420	7.4500E-02	2.2257E-01	4.4930E 00
420 430	7.6000E-02	2.2171E-01	4.5104E 00
430 440	7.7500E-02	2.2089E-01	4.5272E 00
440 450	7.9000E-02	2.2010E-01	4.5434E 00
450 460	8.0500E-02	2.1935E-01	4.5589E 00
460 470	8.1500E-02	2.1730E-01	4.6019E 00
470 480	8.2500E-02	2.1534E-01	4.6439E 00
480 490	8.3000E-02	2.1217E-01	4.7131E 00
490 500	8.3000E-02	2.0789E-01	4.8103E 00
500 510	8.3000E-02	2.0377E-01	4.9075E 00
510 520	8.2500E-02	1.9861E-01	5.0350E 00
520 530	8.0000E-02	1.8892E-01	5.2931E 00
530 540	7.6000E-02	1.7612E-01	5.6778E 00
540 550	6.9500E-02	1.5810E-01	6.3249E 00
550 560	6.0000E-02	1.3403E-01	7.4608E 00
560 570	4.7000E-02	1.0313E-01	9.6960E 00
570 580	3.4000E-02	7.3311E-02	1.3641E 01
580 590	2.4000E-02	5.0864E-02	1.9660E 01
590 600	1.6000E-02	3.3340E-02	2.9994E 01
600 610	1.1300E-02	2.3157E-02	4.3184E 01
610 620	8.3000E-03	1.6732E-02	5.9764E 01
620 630	6.3500E-03	1.2597E-02	7.9387E 01
630 640	5.1500E-03	1.0055E-02	9.9451E 01
640 650	4.1000E-03	7.8810E-03	1.2689E 02
650 660	2.9000E-03	5.4892E-03	1.8217E 02
660 670	1.8500E-03	3.4491E-03	2.8993E 02
670 680	1.3500E-03	2.4796E-03	4.0329E 02
680 690	0.	0.	0.
690 700	0.	0.	0.
700 710	0.	0.	0.
710 720	0.	0.	0.
720 730	0	0.	0.
730 740	0.	0.	0.

EFFECTIVE INTERVAL

[illegible] 1.4[illegible]E 01

TABLE. II J. PHOTOCATHODE SENSITIVITY, S^{t}_{PC}, AND CONVERSION EFFICIENCY, η^{t}_{PC}, κ^{t}_{PC}.

SPECTRAL INTERVAL Δ_i λ_1 to λ_2 $[10^{-9}\,m]$	VARIAN		
	S^{t}_{PC} $[AW^{-1}]$	η^{t}_{PC} [electrons quantum^{-1}]	κ^{t}_{PC} [quanta electron^{-1}]
250 260	0.	0.	0.
260 270	0.	0.	0.
270 280	0.	0.	0.
280 290	0.	0.	0.
290 300	0.	0.	0.
300 310	0.	0.	0.
310 320	0.	0.	0.
320 330	0.	0.	0.
330 340	0.	0.	0.
340 350	0.	0.	0.
350 360	0.	0.	0.
360 370	0.	0.	0.
370 380	0.	0.	0.
380 390	0.	0.	0.
390 400	0.	0.	0.
400 410	2.6750E-02	8.1889E-02	1.2212E 01
410 420	2.9500E-02	8.8131E-02	1.1347E 01
420 430	3.1250E-02	9.1163E-02	1.0969E 01
430 440	3.2250E-02	9.1917E-02	1.0879E 01
440 450	3.2250E-02	8.9852E-02	1.1129E 01
450 460	3.1500E-02	8.5833E-02	1.1650E 01
460 470	3.0750E-02	8.1988E-02	1.2197E 01
470 480	3.0250E-02	7.8957E-02	1.2665E 01
480 490	2.9500E-02	7.5411E-02	1.3261E 01
490 500	2.8500E-02	7.1383E-02	1.4009E 01
500 510	2.7500E-02	6.7515E-02	1.4812E 01
510 520	2.6750E-02	6.4398E-02	1.5528E 01
520 530	2.6000E-02	6.1400E-02	1.6287E 01
530 540	2.5000E-02	5.7935E-02	1.7261E 01
540 550	2.4000E-02	5.4597E-02	1.8316E 01
550 560	2.3250E-02	5.1938E-02	1.9254E 01
560 570	2.2500E-02	4.9373E-02	2.0254E 01
570 580	2.1500E-02	4.6358E-02	2.1571E 01
580 590	2.0750E-02	4.3976E-02	2.2740E 01
590 600	2.0000E-02	4.1674E-02	2.3996E 01
600 610	1.9250E-02	3.9449E-02	2.5349E 01
610 620	1.8500E-02	3.7295E-02	2.6813E 01
620 630	1.7750E-02	3.5211E-02	2.8400E 01
630 640	1.7250E-02	3.3680E-02	2.9691E 01
640 650	1.6500E-02	3.1716E-02	3.1530E 01
650 660	1.5750E-02	2.9812E-02	3.3543E 01
660 670	1.5250E-02	2.8432E-02	3.5172E 01
670 680	1.4750E-02	2.7092E-02	3.6911E 01
680 690	1.4500E-02	2.6244E-02	3.8104E 01
690 700	1.3750E-02	2.4529E-02	4.0769E 01
700 710	1.2750E-02	2.2422E-02	4.4599E 01
710 720	1.2250E-02	2.1242E-02	4.7078E 01
720 730	1.1750E-02	2.0094E-02	4.9767E 01
730 740	1.1250E-02	1.8977E-02	5.2696E 01

TABLE. IIJ. CONTINUED

SPECTRAL INTERVAL Δ_i λ_1 to λ_2 $[10^{-9} m]$		VARIAN		
		s'_{PC} $[A W^{-1}]$	η'_{PC} $[\text{electrons quantum}^{-1}]$	κ'_{PC} $[\text{quanta electron}^{-1}]$
730	740	1.1250E-02	1.8977E-02	5.2696E 01
740	750	1.0750E-02	1.7890E-02	5.5897E 01
750	760	1.0150E-02	1.6668E-02	5.9996E 01
760	770	9.5000E-03	1.5396E-02	6.4950E 01
770	780	8.9000E-03	1.4238E-02	7.0235E 01
780	790	8.3000E-03	1.3109E-02	7.6284E 01
790	800	7.7500E-03	1.2086E-02	8.2739E 01
800	810	7.1500E-03	1.1012E-02	9.0810E 01
810	820	6.3000E-03	9.5838E-03	1.0434E 02
820	830	5.4000E-03	8.1151E-03	1.2323E 02
830	840	4.5000E-03	6.6816E-03	1.4966E 02
840	850	3.6000E-03	5.2820E-03	1.8932E 02
850	860	2.8000E-03	4.0602E-03	2.4629E 02
860	870	2.0750E-03	2.9741E-03	3.3623E 02
870	880	1.4250E-03	2.0191E-03	4.9526E 02
880	890	8.5000E-04	1.1908E-03	8.3978E 02
890	900	4.5000E-04	6.2337E-04	1.6042E 03
900	910	0.	0.	0.
910	920	0.	0.	0.
920	930	0.	0.	0.
930	940	0.	0.	0.
940	95	0.	0.	0.
950	960	0.	0.	0.
960	970	0.	0.	0.
970	980	0.	0.	0.
980	990	0.	0.	0.
990	1000	0.	0.	0.
1000	1010	0.	0.	0.
1010	1020	0.	0.	0.
1020	1030	0.	0.	0.
1030	1040	0.	0.	0.
1040	1050	0.	0.	0.
1050	1060	0.	0.	0.
1060	1070	0.	0.	0.
1070	1080	0.	0.	0.
1080	1090	0.	0.	0.

EFFECTIVE INTERVAL

400	900		3.8256E-02	

TABLE. II K. PHOTOCATHODE SENSITIVITY, S^{t}_{PC}, AND CONVERSION EFFICIENCY, η^{t}_{PC}, κ^{t}_{PC}.

SPECTRAL INTERVAL $\Delta\lambda$ λ_1 to λ_2 [10^{-9} m]		INTERFERENCE S^{t}_{PC} [A W^{-1}]	INTERFERENCE η^{t}_{PC} [electrons quantum^{-1}]	INTERFERENCE κ^{t}_{PC} [quanta electron^{-1}]
250	260	0.	0.	0.
260	270	0.	0.	0.
270	280	0.	0.	0.
280	290	0.	0.	0.
290	300	0.	0.	0.
300	310	0.	0.	0.
310	320	0.	0.	0.
320	330	0.	0.	0.
330	340	0.	0.	0.
340	350	0.	0.	0.
350	360	0.	0.	0.
360	370	4.2000E-02	1.4266E-01	7.0095E 00
370	380	3.2000E-02	1.0580E-01	9.4520E 00
380	390	3.2000E-02	1.0305E-01	9.7041E 00
390	400	3.6000E-02	1.1300E-01	8.8499E 00
400	410	4.1500E-02	1.2704E-01	7.8714E 00
410	420	5.0000E-02	1.4938E-01	6.6946E 00
420	430	6.0500E-02	1.764[illegible]E-01	5.6660E 00
430	440	7.4000E-02	2.1091E-01	4.7413E 00
440	450	9.0000E-02	2.5075E-01	3.9881E 00
450	460	1.0100E-01	2.7521E-01	3.6336E 00
460	470	1.0450E-01	2.7862E-01	3.5891E 00
470	480	1.0200E-01	2.6623E-01	3.7561E 00
480	490	8.8500E-02	2.2623E-01	4.4202E 00
490	500	6.0500E-02	1.5153E-01	6.5992E 00
500	510	2.9000E-02	7.1197E-02	1.4045E 01
510	520	1.1000E-02	2.6481E-02	3.7762E 01
520	530	5.4250E-03	1.2811E-02	7.8055E 01
530	540	3.7000E-03	8.5744E-03	1.1663E 02
540	550	3.7750E-03	8.5877E-03	1.1645E 02
550	560	5.5000E-03	1.2286E-02	8.1391E 01
560	570	9.0000E-03	1.9749E-02	5.0635E 01
570	580	1.27[illegible]0E-02	2.7492E-02	3.6[illegible]75E 01
580	590	1.5750E-02	3.3380E-02	2.9958E 01
590	600	1.8750E-02	3.9070E-02	2.5595E 01
600	610	2.2000E-02	4.5084E-02	2.2181E 01
610	620	2.5250E-02	5.0903E-02	1.9645E 01
620	630	2.8250E-02	5.6040E-02	1.7845E 01
630	640	3.1250E-02	6.1014E-02	1.6390E 01
640	650	3.4500E-02	6.6316E-02	1.5079E 01
650	660	3.7250E-02	7.0508E-02	1.4183E 01
660	670	3.9750E-02	7.4109E-02	1.3494E 01
670	680	4.2000E-02	7.7144E-02	1.2963E 01
680	690	4.4500E-02	8.0543E-02	1.2416E 01
690	700	4.6500E-02	8.2952E-02	1.2055E 01
700	710	4.7500E-02	8.3534E-02	1.1971E 01
710	720	4.7500E-02	8.2365E-02	1.2141E 01
720	730	4.6500E-02	7.9519E-02	1.2576E 01
730	740	4.4000E-02	7.4220E-02	1.3473E 01

TABLE IIK CONTINUED

SPECTRAL INTERVAL Δ_i λ_1 to λ_2 [10^{-9} m]		INTERFERENCE		
		$S^{\dagger}_{PC}$ [AW^{-1}]	$\eta^{\dagger}_{PC}$ [electrons quantum^{-1}]	$\kappa^{\dagger}_{PC}$ [quanta electron^{-1}]
730	740	4.4000E-02	7.4220E-02	1.3473E 01
740	750	4.0000E-02	6.6567E-02	1.5022E 01
750	760	3.5500E-02	5.8296E-02	1.7154E 01
760	770	3.0500E-02	4.9430E-02	2.0230E 01
770	780	2.4500E-02	3.9194E-02	2.5514E 01
780	790	1.8500E-02	2.9219E-02	3.4225E 01
790	800	1.4000E-02	2.1833E-02	4.5802E 01
800	810	0.	0.	0.
810	820	0.	0.	0.
820	830	0.	0.	0.
830	840	0.	0.	0.
840	850	0.	0.	0.
850	860	0.	0.	0.
860	870	0.	0.	0.
870	880	0.	0.	0.
880	890	0.	0.	0.
890	900	0.	0.	0.
900	910	0.	0.	0.
910	920	0.	0.	0.
920	930	0.	0.	0.
930	940	0.	0.	0.
940	950	0.	0.	0.
950	960	0.	0.	0.
960	970	0.	0.	0.
970	980	0.	0.	0.
980	990	0.	0.	0.
990	1000	0.	0.	0.
1000	1010	0.	0.	0.
1010	1020	0.	0.	0.
1020	1030	0.	0.	0.
1030	1040	0.	0.	0.
1040	1050	0.	0.	0.
1050	1060	0.	0.	0.
1060	1070	0.	0.	0.
1070	1080	0.	0.	0.
1080	1090	0.	0.	0.

EFFECTIVE INTERVAL

360	800		9.2848E-02	

TABLE. II L. PHOTOCATHODE SENSITIVITY, S^{t}_{PC}, AND CONVERSION EFFICIENCY, η^{t}_{PC}, κ^{t}_{PC}.

SPECTRAL INTERVAL Δ_i λ_1 to λ_2 [10^{-9} m]		GeAs S^{t}_{PC} [A W^{-1}]	GeAs η^{t}_{PC} [electrons quantum^{-1}]	GeAs κ^{t}_{PC} [quanta electron^{-1}]
250	260	0.	0.	0.
260	270	0.	0.	0.
270	280	0.	0.	0.
280	290	0.	0.	0.
290	300	0.	0.	0.
300	310	0.	0.	0.
310	320	0.	0.	0.
320	330	4.1000E-02	1.5641E-01	6.3936E 00
330	340	5.8000E-02	2.1465E-01	4.6587E 00
340	350	7.2000E-02	2.5874E-01	3.8648E 00
350	360	8.0500E-02	2.8114E-01	3.5569E 00
360	370	8.7000E-02	2.9552E-01	3.3839E 00
370	380	9.1000E-02	3.0086E-01	3.3238E 00
380	390	9.3000E-02	2.9949E-01	3.3390E 00
390	400	9.4500E-02	2.9661E-01	3.3714E 00
400	410	9.5500E-02	2.9235E-01	3.4205E 00
410	420	9.6500E-02	2.8829E-01	3.4687E 00
420	430	9.7000E-02	2.8297E-01	3.5340E 00
430	440	9.7000E-02	2.7646E-01	3.6171E 00
440	450	9.7000E-02	2.7025E-01	3.7003E 00
450	460	9.7000E-02	2.6431E-01	3.7834E 00
460	470	9.7000E-02	2.5863E-01	3.8666E 00
470	480	9.7000E-02	2.5318E-01	3.9497E 00
480	490	9.7000E-02	2.4796E-01	4.0329E 00
490	500	9.7000E-02	2.4295E-01	4.1160E 00
500	510	9.7000E-02	2.3814E-01	4.1992E 00
510	520	9.7000E-02	2.3352E-01	4.2823E 00
520	530	9.6500E-02	2.2789E-01	4.3881E 00
530	540	9.6000E-02	2.2247E-01	4.4950E 00
540	550	9.5500E-02	2.1725E-01	4.6030E 00
550	560	9.5000E-02	2.1222E-01	4.7121E 00
560	570	9.4500E-02	2.0737E-01	4.8224E 00
570	580	9.3500E-02	2.0160E-01	4.9602E 00
580	590	9.2500E-02	1.9604E-01	5.1010E 00
590	600	9.1500E-02	1.9066E-01	5.2449E 00
600	610	9.0500E-02	1.8546E-01	5.3920E 00
610	620	8.9000E-02	1.7942E-01	5.5735E 00
620	630	8.7500E-02	1.7357E-01	5.7612E 00
630	640	8.6500E-02	1.6889E-01	5.9211E 00
640	650	8.5500E-02	1.6435E-01	6.0847E 00
650	660	8.4000E-02	1.5900E-01	6.2893E 00
660	670	8.1500E-02	1.5195E-01	6.5812E 00
670	680	7.8500E-02	1.4419E-01	6.9355E 00
680	690	7.6500E-02	1.3846E-01	7.2223E 00
690	700	7.4500E-02	1.3290E-01	7.5244E 00
700	710	7.2500E-02	1.2750E-01	7.8432E 00
710	720	7.0000E-02	1.2138E-01	8.2386E 00
720	730	6.7000E-02	1.1458E-01	8.7278E 00
730	740	6.4000E-02	1.0796E-01	9.2630E 00

TABLE. IIL. CONTINUED

SPECTRAL INTERVAL Δ_i λ_1 to λ_2 [10^{-9} m]		GaAs		
		$S^{\dagger}_{PC}$ [AW^{-1}]	$\eta^{\dagger}_{PC}$ [electrons quantum^{-1}]	$\varkappa^{\dagger}_{PC}$ [quanta electron^{-1}]
730	740	6.4000E-02	1.0796E-01	9.2630E 00
740	750	5.9500E-02	9.9019E-02	1.0099E 01
750	760	5.5500E-02	9.1139E-02	1.0972E 01
760	770	5.2000E-02	8.4275E-02	1.1866E 01
770	780	4.8500E-02	7.7588E-02	1.2889E 01
780	790	4.5000E-02	7.1072E-02	1.4070E 01
790	800	4.1000E-02	6.3940E-02	1.5640E 01
800	810	3.8000E-02	5.8525E-02	1.7087E 01
810	820	3.5500E-02	5.4004E-02	1.8517E 01
820	830	3.2500E-02	4.8841E-02	2.0475E 01
830	840	2.9500E-02	4.3802E-02	2.2830E 01
840	850	2.6500E-02	3.8882E-02	2.5719E 01
850	860	2.3500E-02	3.4077E-02	2.9346E 01
860	870	2.0500E-02	2.9383E-02	3.4033E 01
870	880	1.8500E-02	2.6213E-02	3.8149E 01
880	890	1.6500E-02	2.3115E-02	4.3262E 01
890	900	1.4000E-02	1.9394E-02	5.1563E 01
900	910	1.2000E-02	1.6440E-02	6.0829E 01
910	920	1.0000E-02	1.3550E-02	7.3801E 01
920	930	8.5000E-03	1.1393E-02	8.7774E 01
930	940	7.0000E-03	9.2820E-03	1.0774E 02
940	950	5.0000E-03	6.5599E-03	1.5244E 02
950	960	3.5000E-03	4.5438E-03	2.2008E 02
960	970	2.0000E-03	2.5696E-03	3.8917E 02
970	980	0.	0.	0.
980	990	0.	0.	0.
990	1000	0.	0.	0.
1000	1010	0.	0.	0.
1010	1020	0.	0.	0.
1020	1030	0.	0.	0.
1030	1040	0.	0.	0.
1040	1050	0.	0.	0.
1050	1060	0.	0.	0.
1060	1070	0.	0.	0.
1070	1080	0.	0.	0.
1080	1090	0.	0.	0.

EFFECTIVE INTERVAL

320	970		1.5269E-01	

TABLE. II M. PHOTOCATHODE SENSITIVITY, $S^{\dagger}_{PC}$, AND CONVERSION EFFICIENCY, $\eta^{\dagger}_{PC}$, $\kappa^{\dagger}_{PC}$.

SPECTRAL INTERVAL Λ_I λ_1 to λ_2 [10^{-9} m]		S-25H2		
		$S^{\dagger}_{PC}$ [A W^{-1}]	$\eta^{\dagger}_{PC}$ [electrons $quantum^{-1}$]	$\kappa^{\dagger}_{PC}$ [quantum $electron^{-1}$]
250	260	0.	0.	0.
260	270	0.	0.	0.
270	280	0.	0.	0.
280	290	0.	0.	0.
290	300	0.	0.	0.
300	310	0.	0.	0.
310	320	0.	0.	0.
320	330	0.	0.	0.
330	340	0.	0.	0.
340	350	0.	0.	0.
350	360	0.	0.	0.
360	370	0.	0.	0.
370	380	0.	0.	0.
380	390	0.	0.	0.
390	400	0.	0.	0.
400	410	0.	0.	0.
410	420	0.	0.	0.
420	430	0.	0.	0.
430	440	9.2500E-03	2.6364E-02	3.7931E 01
440	450	1.1250E-02	3.1344E-02	3.1904E 01
450	460	1.3900E-02	3.7876E-02	2.6402E 01
460	470	1.6800E-02	4.4793E-02	2.2325E 01
470	480	1.9100E-02	4.9854E-02	2.0059E 01
480	490	2.1100E-02	5.3938E-02	1.8540E 01
490	500	2.3100E-02	5.7858E-02	1.7284E 01
500	510	2.4800E-02	6.0886E-02	1.6424E 01
510	520	2.5950E-02	6.2472E-02	1.6007E 01
520	530	2.6850E-02	6.3408E-02	1.5771E 01
530	540	2.7800E-02	6.4424E-02	1.5522E 01
540	550	2.8550E-02	6.4948E-02	1.5397E 01
550	560	2.9050E-02	6.4895E-02	1.5410E 01
560	570	2.9700E-02	6.5172E-02	1.5344E 01
570	580	3.0450E-02	6.5656E-02	1.5231E 01
580	590	3.1300E-02	6.6335E-02	1.5075E 01
590	600	3.2200E-02	6.7096E-02	1.4904E 01
600	610	3.2900E-02	6.7421E-02	1.4832E 01
610	620	3.3450E-02	6.7434E-02	1.4829E 01
620	630	3.3950E-02	6.7347E-02	1.4849E 01
630	640	3.4500E-02	6.7360E-02	1.4846E 01
640	650	3.5050E-02	6.7373E-02	1.4843E 01
650	660	3.5600E-02	6.7385E-02	1.4840E 01
660	670	3.6050E-02	6.7211E-02	1.487[illegible]E 01
670	680	3.6300E-02	6.6674E-02	1.4998E 01
680	690	3.6550E-02	6.6154E-02	1.5116E 01
690	700	3.6800E-02	6.5648E-02	1.5233E 01
700	710	3.7050E-02	6.5156E-02	1.534[illegible] 01
710	720	3.7150E-02	6.4418E-02	1.5524E 01
720	730	3.7050E-02	6.3359E-02	1.5783E 01
730	740	3.7000E-02	6.2412E-02	1.6022E 01

TABLE. II M. CONTINUED

SPECTRAL INTERVAL Δ_i λ_1 to λ_2 $[10^{-9}m]$		S-25H2		
		S^t_{PC} $[A W^{-1}]$	η^t_{PC} [electrons quantum^{-1}]	κ^t_{PC} [quantum electron^{-1}]
730	740	3.7000E-02	6.2412E-02	1.6022E 01
740	750	3.6300E-02	6.0410E-02	1.6554E 01
750	760	3.5250E-02	5.7885E-02	1.7276E 01
760	770	3.4200E-02	5.5427E-02	1.8042E 01
770	780	3.2750E-02	5.2392E-02	1.9087E 01
780	790	3.0950E-02	4.8882E-02	2.0458E 01
790	800	2.9450E-02	4.5928E-02	2.1773E 01
800	810	2.8200E-02	4.3432E-02	2.3025E 01
810	820	2.6550E-02	4.0389E-02	2.4759E 01
820	830	2.4900E-02	3.7420E-02	2.6724E 01
830	840	2.2850E-02	3.3928E-02	2.9474E 01
840	850	2.0050E-02	2.9418E-02	3.3993E 01
850	860	1.6850E-02	2.4434E-02	4.0927E 01
860	870	1.3550E-02	1.9421E-02	5.1490E 01
870	880	1.0550E-02	1.4949E-02	6.6896E 01
880	890	7.4500E-03	1.0437E-02	9.5814E 01
890	900	0.	0.	0.
900	910	0.	0.	0.
910	920	0.	0.	0.
920	930	0.	0.	0.
930	940	0.	0.	0.
940	950	0.	0.	0.
950	960	0.	0.	0.
960	970	0.	0.	0.
970	980	0.	0.	0.
980	990	0.	0.	0.
990	1000	0.	0.	0.
1000	1010	0.	0.	0.
1010	1020	0.	0.	0.
1020	1030	0.	0.	0.
1030	1040	0.	0.	0.
1040	1050	0.	0.	0.
1050	1060	0.	0.	0.
1060	1070	0.	0.	0.
1070	1080	0.	0.	0.
1080	1090	0.	0.	0.
EFFECTIVE INTERVAL				
430	890		5.3205E-02	

TABLE II N. PHOTOCATHODE SENSITIVITY, $S^{\dagger}_{PC}$, AND CONVERSION EFFICIENCY, $\eta^{\dagger}_{PC}$, $\kappa^{\dagger}_{PC}$.

SPECTRAL INTERVAL Λ_i λ_1 to λ_2 $[10^{-9}\,m]$	S-25TI		
	$S^{\dagger}_{PC}$ $[A\,W^{-1}]$	$\eta^{\dagger}_{PC}$ [electrons quantum^{-1}]	$\kappa^{\dagger}_{PC}$ [quantum electron^{-1}]
250 260	0.	0.	0.
260 270	0.	0.	0.
270 280	0.	0.	0.
280 290	0.	0.	0.
290 300	0.	0.	0.
300 310	0.	0.	0.
310 320	0.	0.	0.
320 330	0.	0.	0.
330 340	0.	0.	0.
340 350	0.	0.	0.
350 360	0.	0.	0.
360 370	0.	0.	0.
370 380	0.	0.	0.
380 390	0.	0.	0.
390 400	0.	0.	0.
400 410	0.	0.	0.
410 420	0.	0.	0.
420 430	3.6500E-02	1.0648E-01	9.3916E 00
430 440	3.7750E-02	1.0759E-01	9.2943E 00
440 450	3.9000E-02	1.0866E-01	9.2032E 00
450 460	4.0000E-02	1.0899E-01	9.1748E 00
460 470	4.0500E-02	1.0798E-01	9.2607E 00
470 480	4.0350E-02	1.0532E-01	9.4950E 00
480 490	3.9850E-02	1.0187E-01	9.8165E 00
490 500	3.9100E-02	9.7933E-02	1.0211E 01
500 510	3.8350E-02	9.4152E-02	1.0621E 01
510 520	3.7750E-02	9.0880E-02	1.1004E 01
520 530	3.7000E-02	8.7377E-02	1.1445E 01
530 540	3.6250E-02	8.4006E-02	1.1904E 01
540 550	3.5500E-02	8.0758E-02	1.2383E 01
550 560	3.4600E-02	7.7293E-02	1.2938E 01
560 570	3.3850E-02	7.4279E-02	1.3463E 01
570 580	3.32[illegible]0E-02	7.1694E-02	1.3948E 01
580 590	3.2250E-02	6.834[illegible]E-02	1.4631E 01
590 600	3.1100E-02	6.4804E-02	1.5431E 01
600 610	3.0350E-02	6.2196E-02	1.6078E 01
610 620	2.9500E-02	5.9471E-02	1.6815E 01
620 630	2.8100E-02	5.5742E-02	1.7940E 01
630 640	2.6700E-02	5.2131E-02	1.9183E 01
640 650	2.5700E-02	4.9400E-02	2.0243E 01
650 660	2.4450E-02	4.6280E-02	2.1608E 01
660 670	2.3350E-02	4.3533E-02	2.2971E 01
670 680	2.2350E-02	4.1052E-02	2.4360E 01
680 690	2.1100E-02	3.8190E-02	2.6185E 01
690 700	2.0100E-02	3.5856E-02	2.7889E 01
700 710	1.9450E-02	3.4205E-02	2.9236E 01
710 720	1.8850E-02	3.2686E-02	3.0594E 01
720 730	1.8100E-02	3.0953E-02	3.2307E 01
730 740	1.7450E-02	2.9435E-02	3.3973E 01

TABLE. II N. CONTINUED.

SPECTRAL INTERVAL Λ_i λ_1 to λ_2 $[10^{-9}m]$		S-25 TI		
		$s^{\dagger}_{PC}$	$\eta^{\dagger}_{PC}$	$\kappa^{\dagger}_{PC}$
		$[AW^{-1}]$	[electrons quantum^{-1}]	[quantum electron^{-1}]
730	740	1.7450E-02	2.9435E-02	3.3973E 01
740	750	1.6700E-02	2.7792E-02	3.5982E 01
750	760	1.5850E-02	2.6028E-02	3.8420E 01
760	770	1.5250E-02	2.4715E-02	4.0461E 01
770	780	1.4500E-02	2.3197E-02	4.3110E 01
780	790	1.3750E-02	2.1716E-02	4.6048E 01
790	800	1.3100E-02	2.0430E-02	4.8949E 01
800	810	1.2200E-02	1.8790E-02	5.3221E 01
810	820	1.1350E-02	1.7266E-02	5.7917E 01
820	830	1.0500E-02	1.5779E-02	6.3374E 01
830	840	9.5000E-03	1.4106E-02	7.0894E 01
840	850	8.5000E-03	1.2471E-02	8.0183E 01
850	860	7.1000E-03	1.0296E-02	9.7130E 01
860	870	5.1500E-03	7.3815E-03	1.3547E 02
870	880	3.1000E-03	4.3925E-03	2.2766E 02
880	890	1.8500E-03	2.5917E-03	3.8585E 02
890	900	1.2000E-03	1.6623E-03	6.0157E 02
900	910	0.	0.	0.
910	920	0.	0.	0.
920	930	0.	0.	0.
930	940	0.	0.	0.
940	950	0.	0.	0.
950	960	0.	0.	0.
960	970	0.	0.	0.
970	980	0.	0.	0.
980	990	0.	0.	0.
990	1000	0.	0.	0.
1000	1010	0.	0.	0.
1010	1020	0.	0.	0.
1020	1030	0.	0.	0.
1030	1040	0.	0.	0.
1040	1050	0.	0.	0.
1050	1060	0.	0.	0.
1060	1070	0.	0.	0.
1070	1080	0.	0.	0.
1080	1090	0.	0.	0.
EFFECTIVE INTERVAL				
420	900		5.2045E-02	

TABLE. II a. PHOTOCATHODE SENSITIVITY, $S^{\dagger}_{PC}$, AND CONVERSION EFFICIENCY, $\eta^{\dagger}_{PC}$, $\kappa^{\dagger}_{PC}$.

SPECTRAL INTERVAL Λ_i λ_1 to λ_2 $[10^{-9}m]$	S-25 T2		
	$S^{\dagger}_{PC}$ $[A\,W^{-1}]$	$\eta^{\dagger}_{PC}$ [electrons quantum^{-1}]	$\kappa^{\dagger}_{PC}$ [quantum electron^{-1}]
250 260	0.	0.	0.
260 270	0.	0.	0.
270 280	0.	0.	0.
280 290	0.	0.	0.
290 300	0.	0.	0.
300 310	0.	0.	0.
310 320	0.	0.	0.
320 330	0.	0.	0.
330 340	0.	0.	0.
340 350	0.	0.	0.
350 360	0.	0.	0.
360 370	0.	0.	0.
370 380	0.	0.	0.
380 390	0.	0.	0.
390 400	0.	0.	0.
400 410	0.	0.	0.
410 420	0.	0.	0.
420 430	4.6750E-02	1.3638E-01	7.3325E 00
430 440	4.9750E-02	1.4179E-01	7.0524E 00
440 450	5.3250E-02	1.4836E-01	6.7404E 00
450 460	5.7500E-02	1.5668E-01	6.3824E 00
460 470	6.1750E-02	1.6464E-01	6.0738E 00
470 480	6.5500E-02	1.7096E-01	5.8492E 00
480 490	6.8750E-02	1.7575E-01	5.6900E 00
490 500	7.1000E-02	1.7783E-01	5.6233E 00
500 510	7.2750E-02	1.7861E-01	5.5989E 00
510 520	7.4000E-02	1.7815E-01	5.6133E 00
520 530	7.4000E-02	1.7475E-01	5.7223E 00
530 540	7.2750E-02	1.6859E-01	5.9315E 00
540 550	7.0750E-02	1.6095E-01	6.2132E 00
550 560	6.8000E-02	1.5191E-01	6.5831E 00
560 570	6.5000E-02	1.4263E-01	7.0110E 00
570 580	6.2750E-02	1.3530E-01	7.3909E 00
580 590	6.0000E-02	1.2716E-01	7.8641E 00
590 600	5.6500E-02	1.1773E-01	8.4940E 00
600 610	5.3500E-02	1.0964E-01	9.1211E 00
610 620	5.1250E-02	1.0332E-01	9.6789E 00
620 630	4.8500E-02	9.6210E-02	1.0394E 01
630 640	4.5250E-02	8.8349E-02	1.1319E 01
640 650	4.2500E-02	8.1693E-02	1.2241E 01
650 660	4.0000E-02	7.5714E-02	1.3206E 01
660 670	3.8000E-02	7.0846E-02	1.4115E 01
670 680	3.5850E-02	6.5848E-02	1.5187E 01
680 690	3.4100E-02	6.1719E-02	1.6202E 01
690 700	3.2500E-02	5.7977E-02	1.7248E 01
700 710	3.1250E-02	5.4956E-02	1.8196E 01
710 720	3.0350E-02	5.2627E-02	1.9002E 01
720 730	2.9200E-02	4.9935E-02	2.0026E 01
730 740	2.8100E-02	4.7400E-02	2.1097E 01

TABLE. II O. CONTINUED.

SPECTRAL INTERVAL Λ_i λ_1 to λ_2 [10^{-9}m]		S-25T2 S^t_{PC} [$A W^{-1}$]	S-25T2 η^t_{PC} [electrons quantum^{-1}]	S-25T2 κ^t_{PC} [quantum electron^{-1}]
730	740	2.8100E-02	4.7400E-02	2.1097E 01
740	750	2.6850E-02	4.4683E-02	2.2380E 01
750	760	2.5700E-02	4.2203E-02	2.3695E 01
760	770	2.4850E-02	4.0274E-02	2.4830E 01
770	780	2.3750E-02	3.7994E-02	2.6320E 01
780	790	2.2500E-02	3.5536E-02	2.8140E 01
790	800	2.1500E-02	3.3530E-02	2.9824E 01
800	810	2.0350E-02	3.1342E-02	3.1906E 01
810	820	1.9100E-02	2.9056E-02	3.4417E 01
820	830	1.7500E-02	2.6299E-02	3.8024E 01
830	840	1.5600E-02	2.3163E-02	4.3172E 01
840	850	1.2350E-02	1.8120E-02	5.5187E 01
850	860	8.2500E-03	1.1963E-02	8.3590E 01
860	870	4.9500E-03	7.0949E-03	1.4095E 02
870	880	2.4500E-03	3.4715E-03	2.8806E 02
880	890	1.1500E-03	1.6111E-03	6.2071E 02
890	900	6.0000E-04	8.3116E-04	1.2031E 03
900	910	0.	0.	0.
910	920	0.	0.	0.
920	930	0.	0.	0.
930	940	0.	0.	0.
940	950	0.	0.	0.
950	960	0.	0.	0.
960	970	0.	0.	0.
970	980	0.	0.	0.
980	990	0.	0.	0.
990	1000	0.	0.	0.
1000	1010	0.	0.	0.
1010	1020	0.	0.	0.
1020	1030	0.	0.	0.
1030	1040	0.	0.	0.
1040	1050	0.	0.	0.
1050	1060	0.	0.	0.
1060	1070	0.	0.	0.
1070	1080	0.	0.	0.
1080	1090	0.	0.	0.

EFFECTIVE INTERVAL

420	900		8.7741E-02	

TABLE. 12. NORMALIZED EFFICIENCY VALUES, ξ'_L, FOR FILMS

SPECTRAL INTERVAL Λ_i λ_1 to λ_2 [10^{-9} m]	KODAK ROYAL-X		KODAK TRI-X	
	$\xi'_{L,R,0.3}$	$\xi'_{L,R,1.0}$	$\xi'_{L,T,0.3}$	$\xi'_{L,T,1.0}$
250 260	0.4035	0.1637	0.7365	0.2480
260 270	0.3535	0.1212	0.7172	0.2271
270 280	0.2894	0.0779	0.6220	0.1711
280 290	0.2966	0.0732	0.5679	0.1602
290 300	0.4144	0.1346	0.6014	0.2078
300 310	0.5520	0.3222	0.6765	0.2873
310 320	0.6212	0.4044	0.7335	0.3410
320 330	0.6915	0.4871	0.7623	0.3826
330 340	0.7619	0.6010	0.7745	0.4651
340 350	0.8390	0.7518	0.8140	0.5835
350 360	0.9363	0.9127	0.8876	0.7139
360 370	1.0000	1.0000	0.9582	0.8383
370 380	0.9733	0.9848	1.0000	0.9167
380 390	0.9268	0.9593	0.9854	0.9683
390 400	0.9136	0.9567	0.9388	1.0000
400 410	0.9117	0.9439	0.8844	0.9983
410 420	0.8897	0.9212	0.8242	0.9630
420 430	0.8588	0.8995	0.7776	0.9297
430 440	0.8202	0.8688	0.7337	0.8874
440 450	0.7570	0.8202	0.6929	0.8284
450 460	0.6993	0.7560	0.6239	0.7647
460 470	0.6303	0.7158	0.5448	0.6816
470 480	0.5366	0.6456	0.4630	0.5947
480 490	0.4418	0.5636	0.3867	0.5191
490 500	0.3691	0.5162	0.3138	0.4478
500 510	0.3305	0.5059	0.2696	0.3964
510 520	0.3204	0.5307	0.2644	0.3801
520 530	0.3327	0.5905	0.2746	0.3772
530 540	0.3619	0.6653	0.2952	0.3957
540 550	0.3943	0.7338	0.3286	0.4460
550 560	0.4246	0.7901	0.3705	0.4920
560 570	0.4521	0.8322	0.4134	0.5241
570 580	0.4548	0.8467	0.4161	0.5273
580 590	0.4369	0.8322	0.3772	0.5123
590 600	0.4198	0.7903	0.3507	0.5095
600 610	0.3940	0.7248	0.3370	0.4720
610 620	0.3661	0.6346	0.3050	0.4244
620 630	0.3119	0.5372	0.2775	0.3988
630 640	0.1620	0.2651	0.2731	0.3925
640 650	0.0362	0.0643	0.2720	0.4046
650 660	0.	0.	0.2802	0.4219
660 670	0.	0.	0.2993	0.4552
670 680	0.	0.	0.3019	0.4758
680 690	0.	0.	0.2405	0.3887
690 700	0.	0.	0.1142	0.1863
700 710	0.	0.	0.0378	0.
710 720	0.	0.	0.	0.
720 730	0.	0.	0.	0.
730 740	0.	0.	0.	0.

TABLE 13A. NORMALIZED EFFICIENCY VALUES, $\epsilon_p^\dagger$, FOR PHOSPHOR SCREENS.

SPECTRAL INTERVAL Δ_i λ_1 to λ_2 $[10^{-9}$ m$]$	P-4	P-11	P-16	P-20
	$\epsilon^\dagger_{P4,J}$	$\epsilon^\dagger_{P11,J}$	$\epsilon^\dagger_{P16,J}$	$\epsilon^\dagger_{P20,J}$
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.	0.	0.
310 320	0.	0.	0.	0.
320 330	0.	0.	0.	0.
330 340	0.	0.	0.	0.
340 350	0.	0.	0.	0.
350 360	0.	0.	0.4051	0.
360 370	0.	0.0143	0.7722	0.
370 380	0.0467	0.0255	0.9557	0.
380 390	0.0824	0.0462	1.0000	0.
390 400	0.1444	0.0809	0.9620	0.
400 410	0.2756	0.1511	0.8101	0.
410 420	0.5249	0.2702	0.5949	0.
420 430	0.8005	0.4574	0.3924	0.
430 440	0.9659	0.7021	0.2215	0.
440 450	1.0000	0.9043	0.1165	0.
450 460	0.9029	1.0000	0.0595	0.
460 470	0.7264	1.0000	0.	0.
470 480	0.5722	0.9255	0.	0.0494
480 490	0.4829	0.8128	0.	0.0867
490 500	0.4383	0.6557	0.	0.1642
500 510	0.4436	0.5638	0.	0.3057
510 520	0.4934	0.4319	0.	0.5019
520 530	0.5617	0.3234	0.	0.6981
530 540	0.6404	0.2277	0.	0.8491
540 550	0.7192	0.1511	0.	0.9434
550 560	0.7874	0.0979	0.	1.0000
560 570	0.8294	0.0649	0.	1.0000
570 580	0.8346	0.0417	0.	0.9358
580 590	0.7979	0.0243	0.	0.8151
590 600	0.7034	0.0149	0.	0.6906
600 610	0.5617	0.0096	0.	0.5736
610 620	0.4252	0.	0.	0.4528
620 630	0.3202	0.	0.	0.3547
630 640	0.2362	0.	0.	0.2717
640 650	0.1759	0.	0.	0.2075
650 660	0.1339	0.	0.	0.1456
660 670	0.0976	0	0.	0.1170
670 680	0.0698	0.	0.	0.0906
680 690	0.0520	0.	0.	0.0683
690 700	0.0383	0.	0.	0.0498
700 710	0.0273	0.	0.	0.0362
710 720	0.	0.	0.	0.0257
720 730	0.	0.	0.	0.0174
730 740	0.	0.	0.	0.

TABLE 13B. NORMALIZED EFFICIENCY VALUES, ξ', FOR PHOSPHOR SCREENS

SPECTRAL INTERVAL Δ_i λ_1 to λ_2 [10^{-9} m]	P-22B	P-22G	P-22R	P-31
	$\xi'_{P22B,J}$	$\xi'_{P22G,J}$	$\xi'_{P22R,J}$	$\xi'_{P31,J}$
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.	0.	0.
310 320	0.	0.	0.	0.
320 330	0.	0.	0.	0.
330 340	0.	0.	0.	0.
340 350	0.	0.	0.	0.
350 360	0.	0.	0.	0.
360 370	0.0177	0.	0.	0.
370 380	0.0303	0.	0.	0.
380 390	0.0526	0.	0.	0.0138
390 400	0.0918	0.	0.	0.0251
400 410	0.1711	0.	0.	0.0518
410 420	0.3093	0.	0.	0.1056
420 430	0.5052	0.0139	0.	0.1989
430 440	0.7629	0.0223	0.	0.3233
440 450	0.9794	0.0356	0.	0.4344
450 460	1.0000	0.0584	0.	0.4911
460 470	0.8041	0.0992	0.	0.4844
470 480	0.5309	0.1658	0.	0.4733
480 490	0.3289	0.2826	0.	0.5400
490 500	0.2103	0.4783	0.	0.6778
500 510	0.1320	0.7255	0.	0.8556
510 520	0.0794	0.9158	0.	0.9889
520 530	0.0485	1.0000	0.	1.0000
530 540	0.0291	0.9864	0.	0.9333
540 550	0.0163	0.8832	0.	0.7556
550 560	0.	0.7609	0.0312	0.5333
560 570	0.	0.6250	0.0656	0.3778
570 580	0.	0.475[illegible]	0.1353	0.2667
580 590	0.	0.3696	0.2317	0.1867
590 600	0.	0.2935	0.3486	0.1267
600 610	0.	0.2201	0.4954	0.0844
610 620	0.	0.1603	0.6330	0.0578
620 630	0.	0.1182	0.7431	0.0409
630 640	0.	0.0883	0.8349	0.0284
640 650	0.	0.0666	0.9174	0.0204
650 660	0.	0.0497	0.9771	0.0147
660 670	0.	0.0375	1.0000	0.0107
670 680	0.	0.0291	1.0000	0.
680 690	0.	0.0226	0.9771	0.
690 700	0.	0.0171	0.9312	0.
700 710	0.	0.	0.8624	0.
710 720	0.	0.	0.7706	0.
720 730	0.	0.	0.6789	0.
730 740	0.	0.	0.	0.

TABLE 14A. NORMALIZED EFFICIENCY VALUES, $\mathcal{E}_p^t$, FOR PHOSPHOR SCREENS.

SPECTRAL INTERVAL Δ_i		P-4	P-11	P-16	P-20
λ_1 to	λ_2 [10^{-9} m]	$\mathcal{E}^t_{P4,Q}$	$\mathcal{E}^t_{P11,Q}$	$\mathcal{E}^t_{P16,Q}$	$\mathcal{E}^t_{P20,Q}$
250	260	0.	0.	0.	0.
260	270	0.	0.	0.	0.
270	280	0.	0.	0.	0.
780	290	0.	0.	0.	0.
290	300	0.	0.	0.	0.
300	310	0.	0.	0.	0.
310	320	0.	0.	0.	0.
320	330	0.	0.	0.	0.
330	340	0.	0.	0.	0.
340	350	0.	0.	0.	0.
350	360	0.	0.	0.3735	0.
360	370	0.	0.0112	0.7320	0.
370	380	0.0365	0.0206	0.9309	0.
380	390	0.0661	0.0382	1.0000	0.
390	400	0.1188	0.0687	0.9870	0.
400	410	0.2326	0.1316	0.8522	0.
410	420	0.4539	0.2412	0.6413	0.
420	430	0.7089	0.4181	0.4332	0.
430	440	0.8755	0.6568	0.2503	0.
440	450	0.9272	0.8654	0.1346	0.
450	460	0.8560	0.9785	0.0703	0.
460	470	0.7019	1.0000	0.	0.
470	480	0.5663	0.9454	0.	0.0416
480	490	0.4881	0.8477	0.	0.0761
490	500	0.4521	0.7406	0.	0.1438
500	510	0.4667	0.6123	0.	0.2732
510	520	0.5295	0.4784	0.	0.4575
520	530	0.6144	0.3651	0.	0.6487
530	540	0.7139	0.2619	0.	0.8040
540	550	0.8167	0.1771	0.	0.9100
550	560	0.9106	0.1168	0.	0.9823
560	570	0.9764	0.0788	0.	1.0000
570	530	1.0000	0.0516	0.	0.9524
580	590	0.9726	0.0305	0.	0.8439
590	600	0.8721	0.0191	0.	0.7272
600	610	0.7081	0.0125	0.	0.6142
610	620	0.5449	0.	0.	0.4929
620	630	0.4170	0.	0.	0.3924
630	640	0.3126	0.	0.	0.3054
640	650	0.2363	0.	0.	0.2369
650	660	0.1827	0.	0.	0.1815
660	670	0.1353	0.	0.	0.1377
670	680	0.0982	0.	0.	0.1082
680	690	0.0742	0.	0.	0.0828
690	700	0.0555	0.	0.	0.0613
700	710	0.0401	0.	0.	0.0452
710	720	0.	0.	0.	0.0325
720	730	0.	0.	0.	0.0223
730	740	0.	0.	0.	0.

TABLE 14B. NORMALIZED EFFICIENCY VALUES, ϵ'_p, FOR PHOSPHOR SCREENS.

SPECTRAL INTERVAL Δ_i λ_1 to λ_2 [10^{-9} m]	P-22B	P-22G	P-22R	P-31
	$\epsilon'_{P22B,Q}$	$\epsilon'_{P22G,Q}$	$\epsilon'_{P22R,Q}$	$\epsilon'_{P31,Q}$
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.	0.	0.
310 320	0.	0.	0.	0.
320 330	0.	0.	0.	0.
330 340	0.	0.	0.	0.
340 350	0.	0.	0.	0.
350 360	0.	0.	0.	0.
360 370	0.0142	0.	0.	0.
370 380	0.0250	0.	0.	0.
380 390	0.0445	0.	0.	0.0101
390 400	0.0797	0.	0.	0.0189
400 410	0.1523	0.	0.	0.0399
410 420	0.2821	0.	0.	0.0834
420 430	0.4718	0.0112	0.	0.1610
430 440	0.7294	0.0184	0.	0.2679
440 450	0.9579	0.0300	0.	0.3682
450 460	1.0000	0.0504	0.	0.4256
460 470	0.8218	0.0874	0.	0.4291
470 480	0.5543	0.1492	0.	0.4283
480 490	0.3505	0.2597	0.	0.4989
490 500	0.2288	0.4486	0.	0.6390
500 510	0.1465	0.6943	0.	0.8230
510 520	0.0898	0.8937	0.	0.9701
520 530	0.0559	0.9948	0.	1.0000
530 540	0.0342	1.0000	0.	0.9511
540 550	0.0195	0.9121	0.	0.7843
550 560	0.	0.8002	0.0256	0.5638
560 570	0.	0.6691	0.0549	0.4066
570 580	0.	0.5181	0.1153	0.2921
580 590	0.	0.4097	0.2008	0.2080
590 600	0.	0.3309	0.3073	0.1436
600 610	0.	0.2523	0.4440	0.0973
610 620	0.	0.1868	0.5768	0.0677
620 630	0.	0.1400	0.6881	0.0487
630 640	0.	0.1063	0.7854	0.0344
640 650	0.	0.0814	0.8767	0.0251
650 660	0.	0.0617	0.9481	0.0183
660 670	0.	0.0473	0.9852	0.0135
670 680	0.	0.0372	1.0000	0.
680 690	0.	0.0293	0.9915	0.
690 700	0.	0.0225	0.9588	0.
700 710	0.	0.	0.9007	0.
710 720	0.	0.	0.8163	0.
720 730	0.	0.	0.7292	0.
730 740	0.	0.	0.	0.

TABLE 15A. NORMALIZED EFFICIENCY VALUES, $\epsilon_S^{\dagger}$, FOR PHOTOCATHODES.

SPECTRAL INTERVAL Δ_i	S-1	S-20	S-20R	S-25
λ_1 to λ_2 $[10^{-9}\ m]$	$\epsilon_{S1}^{\dagger}$	$\epsilon_{S20}^{\dagger}$	$\epsilon_{S20R}^{\dagger}$	$\epsilon_{S25}^{\dagger}$
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.2790	0.2790	0.3461
310 320	0.3920	0.4803	0.4803	0.5483
320 330	0.6016	0.6110	0.6110	0.6791
330 340	0.7833	0.7244	0.7244	0.7734
340 350	0.9246	0.7948	0.7948	0.8344
350 360	1.0000	0.8434	0.8434	0.8920
360 370	0.9585	0.9067	0.9067	0.9464
370 380	0.8095	0.9665	0.9665	0.9595
380 390	0.6281	0.9906	0.9906	0.9595
390 400	0.4429	0.9934	0.9934	0.9717
400 410	0.2922	1.0000	1.0000	0.9951
410 420	0.1822	0.9949	0.9949	1.0000
420 430	0.1259	0.9789	0.9789	0.9878
430 440	0.1064	0.9419	0.9419	0.9651
440 450	0.0983	0.8995	0.8995	0.9326
450 460	0.0939	0.8624	0.8624	0.8963
460 470	0.0918	0.8100	0.8100	0.8615
470 480	0.0921	0.7597	0.7597	0.8333
480 490	0.0960	0.7278	0.7278	0.8013
490 500	0.1024	0.6908	0.6908	0.7657
500 510	0.1080	0.6491	0.6678	0.7315
510 520	0.1139	0.6089	0.6487	0.7034
520 530	0.1205	0.5733	0.6123	0.6808
530 540	0.1279	0.5390	0.5773	0.6546
540 550	0.1359	0.5031	0.5378	0.6250
550 560	0.1455	0.4713	0.4997	0.5982
560 570	0.1557	0.4463	0.4742	0.5757
570 580	0.1655	0.4166	0.4495	0.5540
580 590	0.1768	0.3825	0.4148	0.5314
590 600	0.1902	0.3549	0.3814	0.5096
600 610	0.1998	0.3308	0.3595	0.4869
610 620	0.2091	0.3075	0.3382	0.4618
620 630	0.2181	0.2824	0.3127	0.4375
630 640	0.2269	0.2581	0.2904	0.4155
640 650	0.2393	0.2345	0.2663	0.3979
650 660	0.2514	0.2117	0.2406	0.3809
660 670	0.2592	0.1882	0.2251	0.3643
670 680	0.2706	0.1667	0.2125	0.3483
680 690	0.2817	0.1486	0.1932	0.3257
690 700	0.2872	0.1292	0.1723	0.3037
700 710	0.2941	0.1104	0.1565	0.2858
710 720	0.2986	0.0957	0.1411	0.2684
720 730	0.3051	0.0804	0.1239	0.2515
730 740	0.3150	0.0660	0.1093	0.238[illegible]

TABLE 15A. CONTINUED

SPECTRAL INTERVAL Δ_i λ_1 to λ_2 [10^{-9} m]		S-1	S-20	S-20R	S-25
		ε'_{S1}	ε'_{S20}	ε'_{S20R}	ε'_{S25}
730	740	0.3150	0.0660	0.1093	0.2383
740	750	0.3211	0.0542	0.0973	0.2254
750	760	0.3223	0.0426	0.0872	0.2097
760	770	0.3215	0.0334	0.0770	0.1944
770	780	0.3206	0.0252	0.0675	0.1795
780	790	0.3198	0.0181	0.0586	0.1650
790	800	0.3171	0.0131	0.0500	0.1448
800	810	0.3113	0.	0.0423	0.1281
810	820	0.3049	0.	0.0348	0.1177
820	830	0.3000	0.	0.0275	0.1047
830	840	0.2945	0.	0.0215	0.0919
840	850	0.2880	0.	0.0160	0.0801
850	860	0.2798	0.	0.0114	0.0696
860	870	0.2706	0.	0.0077	0.0610
870	880	0.2587	0.	0.0047	0.0526
880	890	0.2459	0.	0.	0.0445
890	900	0.2345	0.	0.	0.0375
900	910	0.2217	0.	0.	0.0313
910	920	0.2069	0.	0.	0.0257
920	930	0.1908	0.	0.	0.0213
930	940	0.1761	0.	0.	0.0174
940	950	0.1606	0.	0.	0.0132
950	960	0.1455	0.	0.	0.0095
960	970	0.1322	0.	0.	0.0065
970	980	0.1182	0.	0.	0.0039
980	990	0.1045	0.	0.	0.
990	1000	0.0920	0.	0.	0.
1000	1010	0.0806	0.	0.	0.
1010	1020	0.0687	0.	0.	0.
1020	1030	0.0575	0.	0.	0.
1030	1040	0.0485	0.	0.	0.
1040	1050	0.0411	0.	0.	0.
1050	1060	0.0349	0.	0.	0.
1060	1070	0.0295	0.	0.	0.
1070	1080	0.0249	0.	0.	0.
1080	1090	0.0209	0.	0.	0.

TABLE. 15B. NORMALIZED EFFICIENCY VALUES, $\xi^{\dagger}$, FOR PHOTOCATHODES.

SPECTRAL INTERVAL Δ_i λ_1 to λ_2 $[10^{-9}\,m]$	S-25HI	VARO	S-4	S-11
	$\xi^{\dagger}_{S25HI}$	$\xi^{\dagger}_{VARO}$	$\xi^{\dagger}_{S4}$	$\xi^{\dagger}_{S11}$
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.	0.	0.
310 320	0.	0.	0.4638	0.
320 330	0.	0.	0.7395	0.1621
330 340	0.	0.	0.8932	0.4004
340 350	0.	0.	0.9425	0.6690
350 360	0.	0.	0.9690	0.8342
360 370	0.	0.	0.9877	0.9306
370 380	0.	0.	0.9990	0.9755
380 390	0.	0.	1.0000	0.9841
390 400	0.	0.	0.9866	0.9922
400 410	0.	0.1702	0.9657	1.0000
410 420	0.	0.2293	0.9391	0.9969
420 430	0.	0.2920	0.9114	0.9939
430 440	1.0000	0.3645	0.8829	0.9811
440 450	0.9146	0.4493	0.8472	0.9590
450 460	0.8377	0.5455	0.8078	0.9284
460 470	0.7827	0.6524	0.7651	0.8897
470 480	0.7435	0.7257	0.7193	0.8526
480 490	0.7166	0.7818	0.6704	0.8081
490 500	0.6978	0.8496	0.6140	0.7566
500 510	0.6993	0.9011	0.5552	0.6985
510 520	0.7318	0.9371	0.5078	0.6342
520 530	0.7629	0.9718	0.4578	0.5806
530 540	0.7688	0.9923	0.4008	0.5291
540 550	0.7587	0.9994	0.3459	0.4635
550 560	0.7450	1.0000	0.2929	0.3923
560 570	0.7280	0.9945	0.2460	0.3276
570 580	0.6929	0.9892	0.2008	0.2727
580 590	0.6479	0.9841	0.1595	0.2196
590 600	0.6153	0.9791	0.1220	0.1683
600 610	0.5852	0.9743	0.0880	0.1209
610 620	0.5497	0.9697	0.0598	0.0793
620 630	0.5155	0.9652	0.0392	0.0502
630 640	0.4890	0.9609	0.0260	0.0302
640 650	0.4714	0.9567	0.	0.0169
650 660	0.4563	0.9526	0.	0.0100
660 670	0.4391	0.9486	0.	0.0065
670 680	0.4192	0.9448	0.	0.0086
680 690	0.3993	0.9411	0.	0.0098
690 700	0.3793	0.9424	0.	0.0055
700 710	0.3543	0.9486	0.	0.0032
710 720	0.3265	0.9546	0.	0.0026
720 730	0.2958	0.9510	0.	0.
730 740	0.2701	0.9380	0.	0.

TABLE. 15B. CONTINUED

SPECTRAL INTERVAL Δ_i λ_1 to λ_2 $[10^{-9}m]$		S-25HI $\epsilon^{\dagger}_{S25HI}$	VARO $\epsilon^{\dagger}_{VARO}$	S-4 $\epsilon^{\dagger}_{S4}$	S-11 $\epsilon^{\dagger}_{S11}$
730	740	0.2701	0.9380	0.	0.
740	750	0.2544	0.9254	0.	0.
750	760	0.2390	0.9132	0.	0.
760	770	0.2258	0.8922	0.	0.
770	780	0.2151	0.8629	0.	0.
780	790	0.2052	0.8431	0.	0.
790	800	0.1950	0.8282	0.	0.
800	810	0.1798	0.8136	0.	0.
810	820	0.1638	0.7910	0.	0.
820	830	0.1488	0.7563	0.	0.
830	840	0.1315	0.7060	0.	0.
840	850	0.1147	0.6364	0.	0.
850	860	0.0992	0.5241	0.	0.
860	870	0.0841	0.3627	0.	0.
870	880	0.0679	0.2443	0.	0.
880	890	0.0506	0.1753	0.	0.
890	900	0.0303	0.0963	0.	0.
900	910	0.	0.0381	0.	0.
910	920	0.	0.0166	0.	0.
920	930	0.	0.0067	0.	0.
930	940	0.	0.	0.	0.
940	950	0.	0.	0.	0.
950	960	0.	0.	0.	0.
960	970	0.	0.	0.	0.
970	980	0.	0.	0.	0.
980	990	0.	0.	0.	0.
990	1000	0.	0.	0.	0.
1000	1010	0.	0.	0.	0.
1010	1020	0.	0.	0.	0.
1020	1030	0.	0.	0.	0.
1030	1040	0.	0.	0.	0.
1040	1050	0.	0.	0.	0.
1050	1060	0.	0.	0.	0.
1060	1070	0.	0.	0.	0.
1070	1080	0.	0.	0.	0.
1080	1090	0.	0.	0.	0.

TABLE 15C. NORMALIZED EFFICIENCY VALUES, $\mathcal{E}^{\dagger}$, FOR PHOTOCATHODES.

SPECTRAL INTERVAL Δ_i λ_1 to λ_2 $[10^{-9}\ m]$	S-17 $\mathcal{E}^{\dagger}_{S17}$	VARIAN $\mathcal{E}^{\dagger}_{VARIAN}$	S-20IF $\mathcal{E}^{\dagger}_{S20IF}$	GaAs $\mathcal{E}^{\dagger}_{GaAs}$
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.2275	0.	0.	0.
290 300	0.4360	0.	0.	0.
300 310	0.6494	0.	0.	0.
310 320	0.8003	0.	0.	0.
320 330	0.9182	0.	0.	0.5199
330 340	0.9752	0.	0.	0.7135
340 350	0.9917	0.	0.	0.8600
350 360	1.0000	0.	0.	0.9345
360 370	0.9937	0.	0.5120	0.9822
370 380	0.9741	0.	0.3797	1.0000
380 390	0.9555	0.	0.3699	0.9954
390 400	0.9443	0.	0.4055	0.9859
400 410	0.9337	0.8909	0.4560	0.9717
410 420	0.9236	0.9588	0.5361	0.9582
420 430	0.9200	0.9918	0.6334	0.9405
430 440	0.9166	1.0000	0.7570	0.9189
440 450	0.9134	0.9775	0.9000	0.8983
450 460	0.9103	0.9338	0.9877	0.8785
460 470	0.9017	0.8920	1.0000	0.8596
470 480	0.8936	0.8590	0.9555	0.8415
480 490	0.8805	0.8204	0.8120	0.8242
490 500	0.3627	0.7766	0.5439	0.8075
500 510	0.8456	0.7345	0.2555	0.7915
510 520	0.8242	0.7006	0.0950	0.7762
520 530	0.7840	0.6680	0.0460	0.7575
530 540	0.7309	0.6303	0.0308	0.7394
540 550	0.6561	0.5940	0.0308	0.7221
550 560	0.5562	0.5651	0.0441	0.7054
560 570	0.4280	0.5371	0.0709	0.6892
570 580	0.3042	0.5043	0.0987	0.6701
580 590	0.2111	0.4784	0.1198	0.6516
590 600	0.1394	0.4534	0.1402	0.6337
600 610	0.0961	0.4292	0.1618	0.6164
610 620	0.0694	0.4057	0.1827	0.5964
620 630	0.0523	0.3831	0.2011	0.5769
630 640	0.0417	0.3664	0.2190	0.5613
640 650	0.0327	0.3451	0.2380	0.5463
650 660	0.0228	0.3243	0.2531	0.5285
660 670	0.0143	0.3093	0.2660	0.5050
670 680	0.0103	0.2947	0.2769	0.4792
680 690	0.	0.2355	0.2891	0.4602
690 700	0.	0.2669	0.2977	0.4417
700 710	0.	0.2439	0.2998	0.4238
710 720	0.	0.2311	0.2956	0.4034
720 730	0.	0.2186	0.2854	0.3808
730 740	0.	0.2065	0.2664	0.3588

TABLE 15C. CONTINUED

SPECTRAL INTERVAL Δ_i λ_1 to λ_2 $[10^{-9}$ m$]$		S-17	VARIAN	S-20IF	GaAs
		$\epsilon^{\dagger}_{S17}$	$\epsilon^{\dagger}_{VARIAN}$	$\epsilon^{\dagger}_{S20IF}$	$\epsilon^{\dagger}_{GaAs}$
730	740	0.	0.2065	0.2664	0.3588
740	750	0.	0.1946	0.2389	0.3[illegible]91
750	760	0.	0.1813	0.2092	0.302[illegible]
760	770	0.	0.1675	0.1774	0.280[illegible]
770	780	0.	0.1549	0.1407	0.2579
780	790	0.	0.1426	0.1049	0.2362
790	800	0.	0.1315	0.0784	0.2125
800	810	0.	0.1198	0.	0.1945
810	820	0.	0.1043	0.	0.1795
820	830	0.	0.0883	0.	0.1623
830	840	0.	0.0727	0.	0.1456
840	850	0.	0.0575	0.	0.1292
850	860	0.	0.0442	0.	0.1133
860	870	0.	0.0324	0.	0.0977
870	880	0.	0.0220	0.	0.0871
880	890	0.	0.0130	0.	0.0768
890	900	0.	0.0068	0.	0.0645
900	910	0.	0.	0.	0.0546
910	920	0.	0.	0.	0.0450
920	930	0.	0.	0.	0.0379
930	940	0.	0.	0.	0.0309
940	950	0.	0.	0.	0.0218
950	960	0.	0.	0.	0.0151
960	970	0.	0.	0.	0.0085
970	980	0.	0.	0.	0.
980	990	0.	0.	0.	0.
990	1000	0.	0.	0.	0.
1000	1010	0.	0.	0.	0.
1010	1020	0.	0.	0.	0.
1020	1030	0.	0.	0.	0.
1030	1040	0.	0.	0.	0.
1040	1050	0.	0.	0.	0.
1050	1060	0.	0.	0.	0.
1060	1070	0.	0.	0.	0.
1070	1080	0.	0.	0.	0.
1080	1090	0.	0.	0.	0.

TABLE. 15D. NORMALIZED EFFICIENCY VALUES, $\xi^{\dagger}$, FOR PHOTOCATHODES.

SPECTRAL INTERVAL Δ_i λ_1 to λ_2 $[10^{-9}\ m]$	S-25H2 $\xi^{\dagger}_{S25H2}$	VARO $\xi^{\dagger}_{VARO}$	S-25T1 $\xi^{\dagger}_{S25T1}$	S-25T2 $\xi^{\dagger}_{S25T2}$
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.	0.	0.
310 320	0.	0.	0.	0.
320 330	0.	0.	0.	0.
330 340	0.	0.	0.	0.
340 350	0.	0.	0.	0.
350 360	0.	0.	0.	0.
360 370	0.	0.	0.	0.
370 380	0.	0.	0.	0.
380 390	0.	0.	0.	0.
390 400	0.	0.	0.	0.
400 410	0.	0.1702	0.	0.
410 420	0.	0.2293	0.	0.
420 430	0.	0.2920	0.9769	0.7636
430 440	0.3910	0.3645	0.9871	0.7939
440 450	0.4648	0.4493	0.9969	0.8306
450 460	0.5617	0.5455	1.0000	0.8772
460 470	0.6643	0.6524	0.9907	0.9218
470 480	0.7393	0.7257	0.9663	0.9572
480 490	0.7999	0.7818	0.9346	0.9840
490 500	0.8580	0.8496	0.8985	0.9957
500 510	0.9029	0.9011	0.8638	1.0000
510 520	0.9264	0.9371	0.8338	0.9974
520 530	0.9403	0.9718	0.8017	0.9784
530 540	0.9554	0.9923	0.7707	0.9439
540 550	0.9631	0.9994	0.7409	0.9011
550 560	0.9623	1.0000	0.7091	0.8505
560 570	0.9665	0.9945	0.6815	0.7[illegible]86
570 580	0.9736	0.9892	0.6578	0.7575
580 590	0.9837	0.9841	0.6271	0.7129
590 600	0.9950	0.9791	0.5946	0.659[illegible]
600 610	0.9998	0.9743	0.5706	0.6138
610 620	1.0000	0.9697	0.5456	0.5785
620 630	0.9987	0.9652	0.5114	0.5387
630 640	0.9989	0.9609	0.4783	0.4947
640 650	0.9991	0.9567	0.4532	0.4574
650 660	0.9993	0.9526	0.4246	0.4239
660 670	0.9967	0.9486	0.3994	0.3967
670 680	0.9887	0.9448	0.3766	0.3687
680 690	0.9810	0.9411	0.3504	0.3456
690 700	0.9735	0.9424	0.3290	0.3246
700 710	0.9662	0.9486	0.3138	0.3077
710 720	0.9553	0.9546	0.2999	0.2947
720 730	0.9396	0.9510	0.2840	0.2796
730 740	0.9255	0.9380	0.2701	0.2654

TABLE 15D. CONTINUED

SPECTRAL INTERVAL Δ_I λ_1 to λ_2 $[10^{-9}\ m]$		S-25H2	VARO	S-25T1	S-25T2
		ϵ'_{S25H2}	ϵ'_{VARO}	ϵ'_{S25T1}	ϵ'_{S25T2}
730	740	0.9255	0.9380	0.2701	0.2654
740	750	0.8958	0.9254	0.2550	0.2502
750	760	0.8584	0.9132	0.2388	0.23[illegible]
760	770	0.8219	0.8922	0.2268	0.2[illegible]55
770	780	0.7769	0.8629	0.2128	0.2127
780	790	0.7249	0.8431	0.1992	0.1990
790	800	0.6811	0.8282	0.1874	0.1877
800	810	0.6441	0.8136	0.1724	0.1755
810	820	0.5989	0.7910	0.1584	0.1627
820	830	0.5549	0.7563	0.1448	0.1472
830	840	0.5031	0.7060	0.1294	0.1297
840	850	0.4363	0.6364	0.1144	0.1015
850	860	0.3623	0.5241	0.0945	0.0670
860	870	0.2880	0.3627	0.0677	0.0397
870	880	0.2217	0.2443	0.0403	0.0194
880	890	0.1548	0.1753	0.0238	0.0090
890	900	0.	0.0963	0.0153	0.0047
900	910	0.	0.07[illegible]	0.	0.
910	920	0.	0.0166	0.	0.
920	930	0.	0.0067	0.	0.
930	940	0.	0.	0.	0.
940	950	0.	0.	0.	0.
950	960	0.	0.	0.	0.
960	970	0.	0.	0.	0.
970	980	0.	0.	0.	0.
980	990	0.	0.	0.	0.
990	1000	0.	0.	0.	0.
1000	1010	0.	0.	0.	0.
1010	1020	0.	0.	0.	0.
1020	1030	0.	0.	0.	0.
1030	1040	0.	0.	0.	0.
1040	1050	0.	0.	0.	0.
1050	1060	0.	0.	0.	0.
1060	1070	0.	0.	0.	0.
1070	1080	0.	0.	0.	0.
1080	1090	0.	0.	0.	0.

Abbreviations used in Tables 16 to 27C

Abbreviation	Definition
NF	Normalization Factor
ROYAL X	Kodak Royal-X Pan
D=0.3	Density above fog $D_\Delta = 0.3$
D=1.0	Density above fog $D_\Delta = 1.0$
TRI X	Kodak Tri-X Pan
LAMBDA	Spectral Interval Λ_j in 10^{-9} m
RX-0.3	Kodak Royal-X Pan with density above fog $D_\Delta = 0.3$
RX-1.0	Kodak Royal-X Pan with density above fog $D_\Delta = 1.0$
TX-0.3	Kodak Tri-X Pan with density above fog $D_\Delta = 0.3$
TX-1.0	Kodak Tri-X Pan with density above fog $D_\Delta = 1.0$
P-4 RX-0.3	Combination phosphor P-4 with film Kodak Royal-X Pan density above fog $D_\Delta = 0.3$
P-4 S-1	Combination phosphor P-4 with photocathode S-1
Phosphor	Phosphor Screen

TABLE 16.

NORMALISATION FACTORS (NF)

FOR

FILM
[GRAINS/QUANTUM]

	ROYAL X		TRI X	
	D=0.3	D=1.0	D=0.3	D=1.0
NF	1.0554E-02	2.2907E-03	2.9643E-03	1.0366E-03

PHOSPHOR
JOULES/ELECTRON

	P-4	P-11	P-16	P-20
NF	1.5260E-17	3.7649E-17	1.2657E-17	2.1226E-17
	P-22B	P-22G	P-22R	P-31
NF	3.8851E-17	2.9479E-17	1.7463E-17	3.6047E-17

PHOSPHOR
QUANTA/ELECTRON

	P-4	P-11	P-16	P-20
NF	3.6870E 01	3.8138E 01	2.4532E 01	6.0382E 01
	P-22B	P-22G	P-22R	P-31
NF	8.8995E 01	7.8320E 01	5.9344E 01	9.5276E 01

PHOTOCATHODE
ELECTRONS/QUANTUM

	S-1	S-20	S-20R	S-25
NF	1.2049E-02	1.9669E-01	1.9669E-01	1.2921E-01
	S-25H1	VARO	S-4	S-11
NF	1.4393E-01	8.[illegible]914E-02	1.3155E-01	1.4235E-01
	S-17	VARIAN	S-20IF	GA AS
NF	2.4098E-01	9.1917E-02	2.7862E-01	3.0086E-01
	S-25H2	VARO	S-25T1	S-25T2
NF	[illegible].7434E-02	[illegible].9914E-02	1.0899E-01	1.7861E-01

TABLE 17A.

SPECTRAL EFFICIENCY OF PHOSPHOR-FILM COMBINATIONS
[GRAINS/ELECTRON]

LAMBDA	P-4 RX-0.3	P-4 RX-1.0	P-4 TX-0.3	P-4 TX-1.0
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.	0.	0.
310 320	0.	0.	0.	0.
320 330	0.	0.	0.	0.
330 340	0.	0.	0.	0.
340 350	0.	0.	0.	0.
350 360	0.	0.	0.	0.
360 370	0.	0.	0.	0.
370 380	1.3827E-02	3.0364E-03	3.9898E-03	1.2791E-03
380 390	2.3843E-02	5.3563E-03	7.1205E-03	2.4468E-03
390 400	4.2238E-02	9.6004E-03	1.2191E-02	4.5411E-03
400 410	8.2509E-02	1.8540E-02	2.2479E-02	8.8736E-03
410 420	1.5716E-01	3.5315E-02	4.0889E-02	1.6708E-02
420 430	2.3692E-01	5.3855E-02	6.0246E-02	2.5191E-02
430 440	2.7944E-01	6.4236E-02	7.0199E-02	2.9694E-02
440 450	2.7314E-01	6.4233E-02	7.0225E-02	2.9359E-02
450 460	2.3293E-01	5.5381E-02	5.8367E-02	2.5017E-02
460 470	1.7216E-01	4.2434E-02	4.1793E-02	1.8286E-02
470 480	1.1824E-01	3.0879E-02	2.8660E-02	1.2872E-02
480 490	8.3900E-02	2.3230E-02	2.0627E-02	9.6833E-03
490 500	6.4929E-02	1.9709E-02	1.5505E-02	7.7377E-03
500 510	6.0029E-02	1.9945E-02	1.3753E-02	7.0723E-03
510 520	6.6022E-02	2.3735E-02	1.5299E-02	7.6924E-03
520 530	7.9545E-02	3.0642E-02	1.8442E-02	8.8583E-03
530 540	1.0054E-01	4.0114E-02	2.3031E-02	1.0797E-02
540 550	1.2532E-01	5.0611E-02	2.9330E-02	1.3920E-02
550 560	1.5044E-01	6.[illegible]763E-02	3.6874E-02	1.7124E-02
560 570	1.7177E-01	6.8632E-02	4.4121E-02	1.9560E-02
570 580	1.7699E-01	7.1507E-02	4.5480E-02	2.0152E-02
580 590	1.6537E-01	6.8359E-02	4.0093E-02	1.9046E-02
590 600	1.4245E-01	5.8207E-02	3.3423E-02	1.6983E-02
600 610	1.0855E-01	4.3344E-02	2.6081E-02	1.2773E-02
610 620	7.7626E-02	2.9204E-02	1.8161E-02	8.8377E-03
620 630	5.0606E-02	1.8919E-02	1.2646E-02	6.3561E-03
630 640	1.9704E-02	6.9987E-03	9.3291E-03	4.6889E-03
640 650	3.3265E-03	1.2827E-03	7.0261E-03	3.6551E-03
650 660	0.	0.	5.5941E-03	2.9461E-03
660 670	0.	0.	4.4252E-03	2.3538E-03
670 680	0.	0.	3.2399E-03	1.7858E-03
680 690	0.	0.	1.9498E-03	1.1019E-03
690 700	0.	0.	6.9259E-04	3.9516E-04
700 710	0.	0.	1.6575E-04	0.
710 720	0.	0.	0.	0.
720 730	0.	0.	0.	0.
730 740	0.	0.	0.	0.
SUM	3.2795E 00	1.0181E 00	8.4145E-01	3.7779E-01

TABLE 17B.

SPECTRAL EFFICIENCY OF PHOSPHOR-FILM COMBINATIONS
[GRAINS/ELECTRON]

LAMBDA	P-11 RX-0.3	P-11 RX-1.0	P-11 TX-0.3	P-11 TX-1.0
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.	0.	0.
310 320	0.	0.	0.	0.
320 330	0.	0.	0.	0.
330 340	0.	0.	0.	0.
340 350	0.	0.	0.	0.
350 360	0.	0.	0.	0.
360 370	1.0409E-02	2.2591E-03	2.8013E-03	8.5705E-04
370 380	1.8643E-02	4.0940E-03	5.3796E-03	1.7246E-03
380 390	3.2955E-02	7.4033E-03	9.8416E-03	3.3819E-03
390 400	5.8365E-02	1.3266E-02	1.6845E-02	6.2750E-03
400 410	1.1158E-01	2.5073E-02	3.0401E-02	1.2001E-02
410 420	1.9959E-01	4.4850E-02	5.1929E-02	2.1219E-02
420 430	3.3401E-01	7.59[illegible]6E-02	8.4937E-02	3.5515E-02
430 440	5.0116E-01	1.1521E-01	1.2590E-01	5.3256E-02
440 450	6.0937E-01	1.4330E-01	1.5667E-01	6.5500E-02
450 460	6.3649E-01	1.5133E-01	1.5949E-01	6.8361E-02
460 470	5.8634E-01	1.4452E-01	1.4234E-01	6.2279E-02
470 480	4.7188E-01	1.2323E-01	1.1438E-01	5.1372E-02
480 490	3.4837E-01	9.6455E-02	8.5648E-02	4.0207E-02
490 500	2.5427E-01	7.7182E-02	6.0720E-02	3.0302E-02
500 510	1.8826E-01	6.2548E-02	4.3131E-02	2.2180E-02
510 520	1.4258E-01	5.1257E-02	3.3040E-02	1.6612E-02
520 530	1.1300E-01	4.3529E-02	2.6197E-02	1.2584E-02
530 540	8.8178E-02	3.5182E-02	2.0199E-02	9.4692E-03
540 550	6.4948E-02	2.6229E-02	1.5200E-02	7.2142E-03
550 560	4.6133E-02	1.8634E-02	1.1308E-02	5.2513E-03
560 570	3.3158E-02	1.3249E-02	8.5171E-03	3.7758E-03
570 580	2.1818E-02	8.8147E-03	5.6064E-03	2.4842E-03
580 590	1.2403E-02	5.1269E-03	3.0069E-03	1.4284E-03
590 600	7.4415E-03	3.0406E-03	1.7460E-03	8.8718E-04
600 610	4.5654E-03	1.8229E-03	1.0969E-03	5.3718E-04
610 620	0.	0.	0.	0.
620 630	0.	0.	0.	0.
630 640	0.	0.	0.	0.
640 650	0.	0.	0.	0.
650 660	0.	0.	0.	0
660 670	0.	0.	0.	0.
670 680	0.	0.	0.	0.
680 690	0.	0.	0.	0.
690 700	0.	0.	0.	0.
700 710	0.	0.	0.	0.
710 720	0.	0.	0.	0.
720 730	0.	0.	0.	0.
730 740	0.	0.	0.	0.
SUM	4.8959E 00	1.2935E 00	1.2163E 00	5.3467E-01

TABLE 17C.

SPECTRAL EFFICIENCY OF PHOSPHOR-FILM COMBINATIONS
[GRAINS/ELECTRON]

LAMBDA		P-16 RX-0.3	P-16 RX-1.0	P-16 TX-0.3	P-16 TX-1.0
250	260	0.	0.	0.	0.
260	270	0.	0.	0.	0.
270	280	0.	0.	0.	0.
280	290	0.	0.	0.	0.
290	300	0.	0.	0.	0.
300	310	0.	0.	0.	0.
310	320	0.	0.	0.	0.
320	330	0.	0.	0.	0.
330	340	0.	0.	0.	0.
340	350	0.	0.	0.	0.
350	360	9.0543E-02	1.9155E-02	2.4109E-02	6.7808E-03
360	370	1.8953E-01	4.1136E-02	5.1009E-02	1.5606E-02
370	380	2.3459E-01	5.1516E-02	6.7693E-02	2.1701E-02
380	390	2.3995E-01	5.3904E-02	7.1658E-02	2.4624E-02
390	400	2.3346E-01	5.3064E-02	6.7381E-02	2.5100E-02
400	410	2.0116E-01	4.5203E-02	5.4807E-02	2.1635E-02
410	420	1.4773E-01	3.3196E-02	3.8436E-02	1.5706E-02
420	430	9.6320E-02	2.1895E-02	2.4494E-02	1.0242E-02
430	440	5.3154E-02	1.2219E-02	1.3353E-02	5.6483E-03
440	450	2.6382E-02	6.2042E-03	6.7828E-03	2.8358E-03
450	460	1.2730E-02	3.0266E-03	3.1898E-03	1.3672E-03
460	470	0.	0.	0.	0.
470	480	0.	0.	0.	0.
480	490	0.	0.	0.	0.
490	500	0.	0.	0.	0.
500	510	0.	0.	0.	0.
510	520	0.	0.	0.	0.
520	530	0.	0.	0.	0.
530	540	0.	0.	0.	0.
540	550	0.	0.	0.	0.
550	560	0.	0.	0.	0.
560	570	0.	0.	0.	0.
570	580	0.	0.	0.	0.
580	590	0.	0.	0.	0.
590	600	0.	0.	0.	0.
600	610	0.	0.	0.	0.
610	620	0.	0.	0.	0.
620	630	0.	0.	0.	0.
630	640	0.	0.	0.	0.
640	650	0.	0.	0.	0.
650	660	0.	0.	0.	0.
660	670	0.	0.	0.	0.
670	680	0.	0.	0.	0.
680	690	0.	0.	0.	0.
690	700	0.	0.	0.	0.
700	710	0.	0.	0.	0.
710	720	0.	0.	0.	0.
720	730	0.	0.	0.	0.
730	740	0.	0.	0.	0.
SUM		1.5256E 00	3.4052E-01	4.22[illegible]1E-01	1.5124E-01

TABLE 17D.

SPECTRAL EFFICIENCY OF PHOSPHOR-FILM COMBINATIONS
[GRAINS/ELECTRON]

LAMBDA	P-20 RX-0.3	P-20 RX-1.0	P-20 TX-0.3	P-20 TX-1.0
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.	0.	0.
310 320	0.	0.	0.	0.
320 330	0.	0.	0.	0.
330 340	0.	0.	0.	0.
340 350	0.	0.	0.	0.
350 360	0.	0.	0.	0.
360 370	0.	0.	0.	0.
370 380	0.	0.	0.	0.
380 390	0.	0.	0.	0.
390 400	0.	0.	0.	0.
400 410	0.	0.	0.	0.
410 420	0.	0.	0.	0.
420 430	0.	0.	0.	0.
430 440	0.	0.	0.	0.
440 450	0.	0.	0.	0.
450 460	0.	0.	0.	0.
460 470	0.	0.	0.	0.
470 480	1.4210E-02	3.7111E-03	3.4445E-03	1.5471E-03
480 490	2.1431E-02	5.9337E-03	5.2689E-03	2.4735E-03
490 500	3.3825E-02	1.0267E-02	8.0775E-03	4.0310E-03
500 510	5.7543E-02	1.9119E-02	1.3183E-02	6.7794E-03
510 520	9.3414E-02	3.3582E-02	2.1647E-02	1.0884E-02
520 530	1.3753E-01	5.2979E-02	3.1885E-02	1.5316E-02
530 540	1.8542E-01	7.3980E-02	4.2474E-02	1.9912E-02
540 550	2.2869E-01	9.2355E-02	5.3523E-02	2.5402E-02
550 560	2.6577E-01	1.0735E-01	6.5144E-02	3.0252E-02
560 570	2.8809E-01	1.1511E-01	7.4001E-02	3.2806E-02
570 580	2.7607E-01	1.1153E-01	7.0938E-02	3.1433E-02
580 590	2.3500E-01	9.7141E-02	5.6974E-02	2.7065E-02
590 600	1.9454E-01	7.9491E-02	4.5645E-02	2.3193E-02
600 610	1.5421E-01	6.1573E-02	3.7049E-02	1.8145E-02
610 620	1.1500E-01	4.3265E-02	2.6905E-02	1.3093E-02
620 630	7.7983E-02	2.9155E-02	1.9487E-02	9.7946E-03
630 640	3.1526E-02	1.1198E-02	1.4927E-02	7.5022E-03
640 650	5.4615E-03	2.1059E-03	1.1535E-02	6.0009E-03
650 660	0.	0.	9.1042E-03	4.7946E-03
660 670	0.	0.	7.3753E-03	3.9230E-03
670 680	0.	0.	5.8465E-03	3.2224E-03
680 690	0.	0.	3.5647E-03	2.0147E-03
690 700	0.	0.	1.2524E-03	7.1454E-04
700 710	0.	0.	3.0600E-04	0.
710 720	0.	0.	0.	0.
720 730	0.	0.	0.	0.
730 740	0.	0.	0.	0.
SUM	2.4157E 00	9.4985E-01	6.2956E-01	3.0030E-01

TABLE 17E.

SPECTRAL EFFICIENCY OF PHOSPHOR-FILM COMBINATIONS
[GRAINS/ELECTRON]

LAMBDA	P-22B RX-0.3	P-22B RX-1.0	P-22B TX-0.3	P-22B TX-1.0
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.	0.	0.
310 320	0.	0.	0.	0.
320 330	0.	0.	0.	0.
330 340	0.	0.	0.	0.
340 350	0.	0.	0.	0.
350 360	0.	0.	0.	0.
360 370	1.3361E-02	2.8998E-03	3.5957E-03	1.1001E-03
370 380	2.2837E-02	5.0152E-03	6.5900E-03	2.1126E-03
380 390	3.8726E-02	8.6998E-03	1.1565E-02	3.9741E-03
390 400	6.8348E-02	1.5535E-02	1.9727E-02	7.3483E-03
400 410	1.3044E-01	2.9311E-02	3.5539E-02	1.4029E-02
410 420	2.3574E-01	5.2972E-02	6.1333E-02	2.5062E-02
420 430	3.8062E-01	8.6521E-02	9.6789E-02	4.0470E-02
430 440	5.6191E-01	1.2917E-01	1.4116E-01	5.9711E-02
440 450	6.8106E-01	1.6016E-01	1.7510E-01	7.3206E-02
450 460	6.5680E-01	1.5616E-01	1.6458E-01	7.0543E-02
460 470	4.8654E-01	1.1992E-01	1.1811E-01	5.1678E-02
470 480	2.7933E-01	7.2948E-02	6.7706E-02	3.0410E-02
480 490	1.4546E-01	4.0274E-02	3.5761E-02	1.6788E-02
490 500	7.9314E-02	2.4075E-02	1.8940E-02	9.4521E-03
500 510	4.5466E-02	1.5106E-02	1.0417E-02	5.3566E-03
510 520	2.7041E-02	9.7212E-03	6.2662E-03	3.1506E-03
520 530	1.7470E-02	6.7298E-03	4.0502E-03	1.9455E-03
530 540	1.1620E-02	4.6361E-03	2.6617E-03	1.2478E-03
540 550	7.2266E-03	2.9184E-03	1.6913E-03	8.0270E-04
550 560	0.	0.	0.	0.
560 570	0.	0.	0.	0.
570 580	0.	0.	0.	0.
580 590	0.	0.	0.	0.
590 600	0.	0.	0.	0.
600 610	0.	0.	0.	0.
610 620	0.	0.	0.	0.
620 630	0.	0.	0.	0.
630 640	0.	0.	0.	0.
640 650	0.	0.	0.	0.
650 660	0.	0.	0.	0.
660 670	0.	0.	0.	0.
670 680	0.	0.	0.	0.
680 690	0.	0.	0.	0.
690 700	0.	0.	0.	0.
700 710	0.	0.	0.	0.
710 720	0.	0.	0.	0.
720 730	0.	0.	0.	0.
730 740	0.	0.	0.	0.
SUM	3.8893E 00	9.4278E-01	9.8159E-01	4.1839E-01

TABLE 17F.

SPECTRAL EFFICIENCY OF PHOSPHOR-FILM COMBINATIONS
[GRAINS/ELECTRON]

LAMBDA	P-22G RX-0.3	P-22G RX-1.0	P-22G TX-0.3	P-22G TX-1.0
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.	0.	0.
310 320	0.	0.	0.	0.
320 330	0.	0.	0.	0.
330 340	0.	0.	0.	0.
340 350	0.	0.	0.	0.
350 360	0.	0.	0.	0.
360 370	0.	0.	0.	0.
370 380	0.	0.	0.	0.
380 390	0.	0.	0.	0.
390 400	0.	0.	0.	0.
400 410	0.	0.	0.	0.
410 420	0.	0.	0.	0.
420 430	7.9231E-03	1.8010E-03	2.0148E-03	8.4245E-04
430 440	1.2453E-02	2.8627E-03	3.1285E-03	1.3233E-03
440 450	1.8783E-02	4.4171E-03	4.8291E-03	2.0189E-03
450 460	2.9116E-02	6.9226E-03	7.2959E-03	3.1272E-03
460 470	4.5535E-02	1.1223E-02	1.1054E-02	4.8366E-03
470 480	6.6171E-02	1.7281E-02	1.6039E-02	7.2039E-03
480 490	9.4843E-02	2.6260E-02	2.3318E-02	1.0946E-02
490 500	1.3686E-01	4.1541E-02	3.2681E-02	1.6309E-02
500 510	1.8968E-01	6.3020E-02	4.3457E-02	2.2347E-02
510 520	2.3670E-01	8.5092E-02	5.4850E-02	2.7578E-02
520 530	2.7357E-01	1.0539E-01	6.3425E-02	3.0466E-02
530 540	2.9914E-01	1.1936E-01	6.8525E-02	3.2125E-02
540 550	2.9730E-01	1.2006E-01	6.9579E-02	3.3023E-02
550 560	2.8081E-01	1.1342E-01	6.8832E-02	3.1964E-02
560 570	2.5004E-01	9.9907E-02	6.4227E-02	2.8473E-02
570 580	1.9480E-01	7.8702E-02	5.0057E-02	2.2180E-02
580 590	1.4796E-01	6.1163E-02	3.5872E-02	1.7041E-02
590 600	1.1481E-01	4.6913E-02	2.6938E-02	1.3688E-02
600 610	8.2176E-02	3.2812E-02	1.9743E-02	9.6692E-03
610 620	5.6542E-02	2.1272E-02	1.3228E-02	6.4373E-03
620 630	3.6088E-02	1.3492E-02	9.0181E-03	4.5326E-03
630 640	1.4231E-02	5.0546E-03	6.7377E-03	3.3864E-03
640 650	2.4328E-03	9.3808E-04	5.1385E-03	2.6731E-03
650 660	0.	0.	4.0146E-03	2.1143E-03
660 670	0.	0.	3.2832E-03	1.7464E-03
670 680	0.	0.	2.6066E-03	1.4367E-03
680 690	0.	0.	1.6347E-03	9.2385E-04
690 700	0.	0.	5.9772E-04	3.4103E-04
700 710	0.	0.	0.	0.
710 720	0.	0.	0.	0.
720 730	0.	0.	0.	0.
730 740	0.	0.	0.	0.
SUM	2.3880E 00	1.0789E 00	7.1213E-01	3.3875E-01

TABLE 17G.

SPECTRAL EFFICIENCY OF PHOSPHOR-FILM COMBINATIONS
[GRAINS/ELECTRON]

LAMBDA	P-22R RX-0.3	P-22R RX-1.0	P-22R TX-0.3	P-22R TX-1.0
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.	0.	0.
310 320	0.	0.	0.	0.
320 330	0.	0.	0.	0.
330 340	0.	0.	0.	0.
340 350	0.	0.	0.	0.
350 360	0.	0.	0.	0.
360 370	0.	0.	0.	0.
370 380	0.	0.	0.	0.
380 390	0.	0.	0.	0.
390 400	0.	0.	0.	0.
400 410	0.	0.	0.	0.
410 420	0.	0.	0.	0.
420 430	0.	0.	0.	0.
430 440	0.	0.	0.	0.
440 450	0.	0.	0.	0.
450 460	0.	0.	0.	0.
460 470	0.	0.	0.	0.
470 480	0.	0.	0.	0.
480 490	0.	0.	0.	0.
490 500	0.	0.	0.	0.
500 510	0.	0.	0.	0.
510 520	0.	0.	0.	0.
520 530	0.	0.	0.	0.
530 540	0.	0.	0.	0.
540 550	0.	0.	0.	0.
550 560	6.8197E-03	2.7546E-03	1.6716E-03	7.7628E-04
560 570	1.5546E-02	6.2116E-03	3.9933E-03	1.7703E-03
570 580	3.2838E-02	1.3267E-02	8.4382E-03	3.7390E-03
560 590	5.4941E-02	2.2711E-02	1.3320E-02	6.3277E-03
590 600	8.0794E-02	3.3013E-02	1.8956E-02	9.6322E-03
600 610	1.0957E-01	4.3749E-02	2.6325E-02	1.2892E-02
610 620	1.3225E-01	4.9755E-02	3.0941E-02	1.5057E-02
620 630	1.3440E-01	5.0245E-02	3.3[illegible]85E-02	1.6880E-02
630 640	7.9692E-02	2.8306E-02	3.7731E-02	1.8964E-02
640 650	1.9860E-02	7.6578E-03	4.1947E-02	2.1821E-02
650 660	0.	0.	4.6728E-02	2.4609E-02
660 670	0.	0.	5.1865E-02	2.7587E-02
670 680	0.	0.	5.3106E-02	2.9271E-02
680 690	0.	0.	4.1950E-02	2.3709E-02
690 700	0.	0.	1.9260E-02	1.0989E-02
700 710	0.	0.	5.9925E-03	0.
710 720	0.	0.	0.	0.
720 730	0.	0.	0.	0.
730 740	0.	0.	0.	0.
SUM	6.6671E-01	2.5767E-01	4.3581E-01	2.2402E-01

TABLE 17H.

SPECTRAL EFFICIENCY OF PHOSPHOR-FILM COMBINATIONS
[GRAINS/ELECTRON]

LAMBDA		P-31 RX-0.3	P-31 RX-1.0	P-31 TX-0.3	P-31 TX-1.0
250	260	0.	0.	0.	0.
260	270	0.	0.	0.	0.
270	280	0.	0.	0.	0.
280	290	0.	0.	0.	0.
290	300	0.	0.	0.	0.
300	310	0.	0.	0.	0.
310	320	0.	0.	0.	0.
320	330	0.	0.	0.	0.
330	340	0.	0.	0.	0.
340	350	0.	0.	0.	0.
350	360	0.	0.	0.	0.
360	370	0.	0.	0.	0.
370	380	0.	0.	0.	0.
380	390	9.4158E-03	0.	0.	0.
390	400	1.7356E-02	2.1152E-03	2.8119E-03	9.6625E-04
400	410	3.6618E-02	3.9449E-03	5.0093E-03	1.8660E-03
410	420	7.4651E-02	8.2283E-03	9.9766E-03	3.9382E-03
420	430	1.3904E-01	1.6774E-02	1.9422E-02	7.9364E-03
430	440	2.2097E-01	3.1607E-02	3.5358E-02	1.4784E-02
440	450	2.8031E-01	5.0795E-02	5.5511E-02	2.3481E-02
450	460	2.9929E-01	6.5919E-02	7.2068E-02	3.0130E-02
460	470	2.7196E-01	7.1158E-02	7.4995E-02	3.2144E-02
470	480	2.3106E-01	6.7033E-02	6.6021E-02	2.8887E-02
480	490	2.2160E-01	6.0341E-02	5.6005E-02	2.5154E-02
490	500	2.3716E-01	6.1357E-02	5.4483E-02	2.5577E-02
500	510	2.7351E-01	7.1989E-02	5.6635E-02	2.8264E-02
510	520	3.1255E-01	9.0872E-02	6.2662E-02	3.2223E-02
520	530	3.3453E-01	1.1236E-01	7.2428E-02	3.6416E-02
530	540	3.4612E-01	1.2887E-01	7.7558E-02	3.7255E-02
540	550	3.1102E-01	1.3810E-01	7.9286E-02	3.7169E-02
550	560	2.4070E-01	1.2560E-01	7.2791E-02	3.4[illegible]47E-02
560	570	1.8482E-01	9.7221E-02	5.8999E-02	2.7398E-02
570	580	1.3358E-01	7.3844E-02	4.7472E-02	2.1046E-02
580	590	9.1387E-02	5.3967E-02	3.4325E-02	1.5209E-02
590	600	6.0595E-02	3.7777E-02	2.2156E-02	1.0525E-02
600	610	3.8552E-02	2.4760E-02	1.4217E-02	7.2242E-03
610	620	2.4917E-02	1.5393E-02	9.2624E-03	4.5362E-03
620	630	1.5265E-02	9.3741E-03	5.8294E-03	2.8368E-03
630	640	5.6047E-03	5.7069E-03	3.8146E-03	1.9172E-03
640	650	9.1356E-04	1.9907E-03	2.6536E-03	1.3337E-03
650	660	0.	3.5226E-04	1.9296E-03	1.0038E-03
660	670	0.	0.	1.4479E-03	7.6252E-04
670	680	0.	0.	1.1420E-03	6.0743E-04
680	690	0.	0.	0.	0.
690	700	0.	0.	0.	0.
700	710	0.	0.	0.	0.
710	720	0.	0.	0.	0.
720	730	0.	0.	0.	0.
730	740	0.	0.	0.	0.
SUM		4.4135E 00	1.4275E 00	1.0763E 00	4.9514E-01

TABLE 18A.

SPECTRAL EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS
[PHOTOELECTRONS/10 KV-ELECTRON]

LAMBDA	P-4 S-1	P-4 S-20	P-4 S-20R	P-4 S-25
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.	0.	0.
310 320	0.	0.	0.	0.
320 330	0.	0.	0.	0.
330 340	0.	0.	0.	0.
340 350	0.	0.	0.	0.
350 360	0.	0.	0.	0.
360 370	0.	0.	0.	0.
370 380	1.3127E-02	2.5587E-01	2.5587E-01	1.6687E-01
380 390	1.8447E-02	4.7492E-01	4.7492E-01	3.0222E-01
390 400	2.3375E-02	8.5594E-01	8.5594E-01	5.5000E-01
400 410	3.0187E-02	1.6866E 00	1.6866E 00	1.1025E 00
410 420	3.6750E-02	3.2750E 00	3.2750E 00	2.1625E 00
420 430	3.9650E-02	5.0325E 00	5.0325E 00	3.3359E 00
430 440	4.1400E-02	5.9800E 00	5.9800E 00	4.0250E 00
440 450	4.0481E-02	6.0484E 00	6.0484E 00	4.1196E 00
450 460	3.5690E-02	5.3535E 00	5.3535E 00	3.6550E 00
460 470	2.8635E-02	4.1227E 00	4.1227E 00	2.8807E 00
470 480	2.3162E-02	3.1201E 00	3.1201E 00	2.2481E 00
480 490	2.0815E-02	2.5760E 00	2.5760E 00	1.8630E 00
490 500	2.0562E-02	2.2649E 00	2.2649E 00	1.6491E 00
500 510	2.2392E-02	2.1970E 00	2.2604E 00	1.6266E 00
510 520	2.6790E-02	2.3382E 00	2.4910E 00	1.7742E 00
520 530	3.2902E-02	2.5546E 00	2.7285E 00	1.9929E 00
530 540	4.0565E-02	2.7907E 00	2.9890E 00	2.2265E 00
540 550	4.9320E-02	2.9797E 00	3.1852E 00	2.4317E 00
550 560	5.8875E-02	3.1125E 00	3.3000E 00	2.5950E 00
560 570	6.7545E-02	3.1600E 00	3.3575E 00	2.6781E 00
570 580	7.3537E-02	3.0210E 00	3.2595E 00	2.6394E 00
580 590	7.6380E-02	2.6980E 00	2.9260E 00	2.4624E 00
590 600	7.3700E-02	2.2445E 00	2.4120E 00	2.1172E 00
600 610	6.2862E-02	1.6986E 00	1.8457E 00	1.6424E 00
610 620	5.0625E-02	1.2150E 00	1.3365E 00	1.1988E 00
620 630	4.0412E-02	8.5400E-01	9.4550E-01	8.6925E-01
630 640	3.1500E-02	5.8500E-01	6.5812E-01	6.1875E-01
640 650	2.5125E-02	4.0200E-01	4.5644E-01	4.4806E-01
650 660	2.0400E-02	2.8050E-01	3.1875E-01	3.3150E-01
660 670	1.5577E-02	1.8460E-01	2.2087E-01	2.3462E-01
670 680	1.1804E-02	1.1870E-01	1.5129E-01	1.6292E-01
680 690	9.2812E-03	7.9942E-02	1.0395E-01	1.1509E-01
690 700	7.0810E-03	5.2012E-02	6.9350E-02	8.0300E-02
700 710	5.2390E-03	3.2110E-02	4.5500E-02	5.4600E-02
710 720	0.	0.	0.	0.
720 730	0.	0.	0.	0.
730 740	0.	0.	0.	0.
SUM	1.1742E 00	7.3645E 01	7.6108E 01	5.6361E 01

TABLE 18B.

SPECTRAL EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS
[PHOTOELECTRONS/10 KV-ELECTRON]

LAMBDA		P-4 S-25H1	P-4 VARO	P-4 S-4	P-4 S-11
250	260	0.	0.	0.	0.
260	270	0.	0.	0.	0.
270	280	0.	0.	0.	0.
280	290	0.	0.	0.	0.
290	300	0.	0.	0.	0.
300	310	0.	0.	0.	0.
310	320	0.	0.	0.	0.
320	330	0.	0.	0.	0.
330	340	0.	0.	0.	0.
340	350	0.	0.	0.	0.
350	360	0.	0.	0.	0.
360	370	0.	0.	0.	0.
370	380	0.	0.	1.7689E-01	1.8690E-01
380	390	0.	0.	3.2067E-01	3.4147E-01
390	400	0.	0.	5.6856E-01	6.7875E-01
400	410	0.	1.3125E-01	1.0894E 00	1.2206E 00
410	420	0.	3.4500E-01	2.0675E 00	2.3750E 00
420	430	0.	6.8625E-01	3.1339E 00	3.6981E 00
430	440	4.6460E 00	1.0580E 00	3.7490E 00	4.5080E 00
440	450	4.5006E 00	1.3811E 00	3.8100E 00	4.6672E 00
450	460	3.8055E 00	1.5480E 00	3.3540E 00	4.1710E 00
460	470	2.9152E 00	1.5180E 00	2.6047E 00	3.2775E 00
470	480	2.2345E 00	1.3625E 00	1.9756E 00	2.5342E 00
480	490	1.8561E 00	1.2650E 00	1.5870E 00	2.0700E 00
490	500	1.6742E 00	1.2734E 00	1.3464E 00	1.7952E 00
500	510	1.7322E 00	1.3942E 00	1.2569E 00	1.7111E 00
510	520	2.0562E 00	1.6450E 00	1.3042E 00	1.7625E 00
520	530	2.4877E 00	1.9795E 00	1.3642E 00	1.8725E 00
530	540	2.9127E 00	2.3485E 00	1.3877E 00	1.9825E 00
540	550	3.2880E 00	2.7057E 00	1.3700E 00	1.9865E 00
550	560	3.6000E 00	3.0187E 00	1.2937E 00	1.8750E 00
560	570	3.7722E 00	3.2192E 00	1.1652E 00	1.6787E 00
570	580	3.6769E 00	3.2794E 00	9.7387E-01	1.4310E 00
580	590	3.3440E 00	3.1730E 00	7.5240E-01	1.1210E 00
590	600	2.8475E 00	2.8307E 00	5.1590E-01	7.7050E-01
600	610	2.1988E 00	2.2871E 00	3.0227E-01	4.4940E-01
610	620	1.5896E 00	1.7516E 00	1.5795E-01	2.2680E-01
620	630	1.1407E 00	1.3244E 00	7.9300E-02	1.0980E-01
630	640	8.1112E-01	9.9562E-01	3.9375E-02	4.9500E-02
640	650	5.9127E-01	7.4956E-01	0.	2.0937E-02
650	660	4.4242E-01	5.7694E-01	0.	[illegible].5625E-03
660	670	3.1527E-01	4.2547E-01	0.	4.6500E-03
670	680	2.1845E-01	3.0756E-01	0.	4.4555E-03
680	690	1.5716E-01	2.3141E-01	0.	3.8115E-03
690	700	1.1169E-01	1.7337E-01	0.	[illegible]
700	710	7.5400E-02	1.2610E-01	0.	[illegible]
710	720	0.	0.	0.	0.
720	730	0.	0.	0.	[illegible]
730	740	0.	0.	0.	0.
SUM		5.9002E 01	4.5122E 01	[illegible]	[illegible]

TABLE 18C.

SPECTRAL EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS
[PHOTOELECTRONS/10 KV-ELECTRON]

LAMBDA	P-4 S-17	P-4 VARIAN	P-4 S-20IF	P-4 GA AS
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.	0.	0.
310 320	0.	0.	0.	0.
320 330	0.	0.	0.	0.
330 340	0.	0.	0.	0.
340 350	0.	0.	0.	0.
350 360	0.	0.	0.	0.
360 370	0.	0.	0.	0.
370 380	3.1595E-01	0.	1.4240E-01	4.0495E-01
380 390	5.6127E-01	0.	2.5120E-01	7.3005E-01
390 400	9.9687E-01	0.	4.9500E-01	1.2994E 00
400 410	1.9294E 00	7.0219E-01	1.0894E 00	2.5069E 00
410 420	3.7250E 00	1.4750E 00	2.5000E 00	4.8250E 00
420 430	5.7950E 00	2.3828E 00	4.6131E 00	7.3962E 00
430 440	7.1300E 00	2.9670E 00	6.8080E 00	8.9240E 00
440 450	7.5247E 00	3.0718E 00	8.5725E 00	9.2392E 00
450 460	6.9230E 00	2.7090E 00	8.6860E 00	8.3420E 00
460 470	5.6235E 00	2.1217E 00	7.2105E 00	6.6930E 00
470 480	4.4962E 00	1.6486E 00	5.5590E 00	5.2865E 00
480 490	3.8180E 00	1.3570E 00	4.0710E 00	4.4620E 00
490 500	3.4652E 00	1.1899E 00	2.5259E 00	4.0497E 00
500 510	3.5067E 00	1.1619E 00	1.2252E 00	4.0982E 00
510 520	3.8775E 00	1.2572E 00	5.1700E-01	4.5590E 00
520 530	4.2800E 00	1.3910E 00	2.9024E-01	5.1627E 00
530 540	4.6360E 00	1.5250E 00	2.2570E-01	5.8560E 00
540 550	4.7607E 00	1.6440E 00	2.5859E-01	6.5417E 00
550 560	4.5000E 00	1.7437E 00	4.1250E-01	7.1250E 00
560 570	3.7130E 00	1.7775E 00	7.1100E-01	7.4655E 00
570 580	2.7030E 00	1.7092E 00	1.0136E 00	7.4332E 00
580 590	1.8240E 00	1.5770E 00	1.1970E 00	7.0300E 00
590 600	1.0720E 00	1.3400E 00	1.2562E 00	6.1305E 00
600 610	6.0455E-01	1.0299E 00	1.1770E 00	4.8417E 00
610 620	3.3615E-01	7.4925E-01	1.0226E 00	3.6045E 00
620 630	1.9367E-01	5.4137E-01	8.6162E-01	2.6687E 00
630 640	1.1587E-01	3.8812E-01	7.0312E-01	1.9462E 00
640 650	6.8675E-02	2.7637E-01	5.7787E-01	1.4321E 00
650 660	3.6975E-02	2.0081E-01	4.7494E-01	1.0710E 00
660 670	1.7205E-02	1.4182E-01	3.6967E-01	7.5795E-01
670 680	8.9775E-03	9.8087E-02	2.7930E-01	5.2202E-01
680 690	0.	7.1775E-02	2.2027E-01	3.7867E-01
690 700	0.	5.0187E-02	1.6972E-01	2.7192E-01
700 710	0.	3.3150E-02	1.2350E-01	1.8850E-01
710 720	0.	0.	0.	0.
720 730	0.	0.	0.	0.
730 740	0.	0.	0.	0.
SUM	8.8559E 01	3.8333E 01	5.5611E 01	1.4324E 02

TABLE 18D.

SPECTRAL EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS
[PHOTOELECTRONS/10 KV-ELECTRON]

LAMBDA	P-4 S-25H2	P-4 VARO	P-4 S-25T1	P-4 S 25T2
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.	0.	0.
310 320	0.	0.	0.	0.
320 330	0.	0.	0.	0.
330 340	0.	0.	0.	0.
340 350	0.	0.	0.	0.
350 360	0.	0.	0.	0.
360 370	0.	0.	0.	0.
370 380	0.	0.	0.	0.
380 390	0.	0.	0.	0.
390 400	0.	0.	0.	0.
400 410	0.	1.3125E-01	0.	0.
410 420	0.	3.4500E-01	0.	0.
420 430	0.	6.8625E-01	2.7831E 00	3.5647E 00
430 440	8.5100E-01	1.0580E 00	3.4730E 00	4.5770E 00
440 450	1.0716E 00	1.3811E 00	3.7147E 00	5.0721E 00
450 460	1.1954E 00	1.5480E 00	3.4400E 00	4.9450E 00
460 470	1.1592E 00	1.5180E 00	2.7945E 00	4.2607E 00
470 480	1.0409E 00	1.3625E 00	2.1991E 00	3.5697E 00
480 490	9.7060E-01	1.2650E 00	1.8331E 00	3.1625E 00
490 500	9.6442E-01	1.2734E 00	1.6324E 00	2.9642E 00
500 510	1.0478E 00	1.3942E 00	1.6203E 00	3.0737E 00
510 520	1.2196E 00	1.6450E 00	1.7742E 00	3.4780E 00
520 530	1.4365E 00	1.97[illegible]5E 00	1.9795E 00	3.9590E 00
530 540	1.6958E 00	2.3485E 00	2.2112E 00	4.4377E 00
540 550	1.9557E 00	2.70[illegible]7E 00	2.4317E 00	4.8464E 00
550 560	2.1787E 00	3.0187E 00	2.5950E 00	5.100[illegible]E 00
560 570	2.3463E 00	3.2192E 00	2.6741E 00	5.1[illegible]50E 00
570 580	2.4208E 00	3.2794E 00	2.6434E 00	4.9886E 00
580 590	2.3788E 00	3.1730E 00	2.4510E 00	4.5600E 00
590 600	2.1574E 00	2.8307E 00	2.0837E 00	3.7855E 00
600 610	1.7601E 00	2.2871E 00	1.6237E 00	2.8622E 00
610 620	1.3547E 00	1.7516E 00	1.1947E 00	2.0756E 00
620 630	1.0355E 00	1.3344E 00	8.5705E-01	1.4792E 00
630 640	7.7625E-01	9.9562E-01	6.0075E-01	1.0181E 00
640 650	5.8709E-01	7.4956E-01	4.3047E-01	7.1187E-01
650 660	4.5390E-01	5.7694E-01	3.1174E-01	5.1000E-01
660 670	3.3526E-01	4.2547E-01	2.1715E-01	3.5340E-01
670 680	2.4139E-01	3.0756E-01	1.4863E-01	2.3840E-01
680 690	1.8092E-01	2.3141E-01	1.0444E-01	1.6879E-01
690 700	1.3432E-01	1.7337E-01	7.3365E-02	1.1862E-01
700 710	9.6330E-02	1.2610E-01	5.0570E-02	8.1250E-02
710 720	0.	0.	0.	0.
720 730	0.	0.	0.	0.
730 740	0.	0.	0.	0.
SUM	3.3046E 01	4.5122E 01	4.9947E 01	8.5098E 01

TABLE 19A.

SPECTRAL EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS
[PHOTOELECTRONS/10 KV-ELECTRON]

LAMBDA	P-11 S-1	P-11 S-20	P-11 S-20R	P-11 S-25
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.	0.	0.
310 320	0.	0.	0.	[illegible]
320 330	0.	0.	0.	0.
330 340	0.	0.	0.	0.
340 350	0.	0.	0.	0.
350 360	0.	0.	0.	0.
360 370	1.1390E-02	1.7587E-01	1.7587E-01	1.2060E-01
370 380	1.7700E-02	3.4500E-01	3.4500E-01	2.2500E-01
380 390	2.5497E-02	[illegible].5642E-01	6.5642E-01	4.1772E-01
390 400	3.2300E-02	[illegible].1827E 00	1.1827E 00	7.60[illegible]E-01
400 410	4.0825E-02	2.2809E 00	2.2809E 00	1.4910E 00
410 420	4.6672E-02	4.1592E 00	4.1592E 00	2.7464E 00
420 430	5.5900E-02	7.0950E 00	7.0950E 00	4.7031E 00
430 440	7.4250E-02	1.0725E 01	1.0725E 01	7.2187E 00
440 450	9.0312E-02	1.3494E 01	1.3494E 01	9.1906E 00
450 460	9.7525E-02	1.4629E 01	1.4629E 01	9.9875E 00
460 470	9.7525E-02	1.4041E 01	1.4041E 01	9.8112E 00
470 480	9.2437E-02	1.2452E 01	1.2452E 01	8.9719E 00
480 490	8.6427E-02	1.0696E 01	1.0696E 01	7.7355E 00
490 500	8.0524E-02	8.8699E 00	8.8699E 00	6.4582E 00
500 510	7.0225E-02	6.8900E 00	7.0887E 00	5.1012E 00
510 520	5.7855E-02	5.0496E 00	5.3795E 00	3.8316E 00
520 530	4.6740E-02	3.6290E 00	3.8760E 00	2.8310E 00
530 540	3.5577E-02	2.4476E 00	2.6215E 00	1.9527E 00
540 550	2.5560E-02	1.5442E 00	1.6507E 00	1.2602E 00
550 560	1.8055E-02	9.5450E-01	1.0120E 00	7.9580E-01
560 570	1.3039E-02	6.1000E-01	6.4812E-01	5.1697E-01
570 580	9.0650E-03	3.7240E-01	4.0180E-01	3.2536E-01
580 590	5.7235E-03	2.02[illegible]5E-01	2.1[illegible]45E-01	1.8468E-01
590 600	3.8500E-03	1.1[illegible]25E-01	1.2600E-01	1.1060E-01
600 610	2.6[illegible]7E-03	7.1437E-02	7.7625E-02	6.9075E-02
610 620	0.	0.	0.	0.
620 630	0.	0.	0.	0.
630 640	0.	0.	0.	0.
640 650	0.	0.	0.	0.
650 660	0.	0.	0.	0.
660 670	0.	0.	0.	0.
670 680	0.	0.	0.	0.
680 690	0.	0.	0.	0.
690 700	0.	0.	0.	0.
700 710	0.	0.	0.	0.
710 720	0.	0.	0.	0.
720 730	0.	0.	0.	0.
730 740	0.	0.	0.	0.
SUM	1.1376E 00	1.2269E 02	1.2390E 02	8.66[illegible]7E 01

TABLE 19B.

SPECTRAL EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS
[PHOTOELECTRONS/10 KV-ELECTRON]

LAMBDA	P-11 S-25-1	P-11 VARO	P-11 S-4	P-11 S-11
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.	0.	0.
310 320	0.	0.	0.	0.
320 330	0.	0.	0.	0.
330 340	0.	0.	0.	0.
340 350	0.	0.	0.	0.
350 360	0.	0.	0.	0.
360 370	0.	0.	1.2814E-01	1.3065E-01
370 380	0.	0.	2.3850E-01	2.5200E-01
380 390	0.	0.	4.4322E-01	4.7197E-01
390 400	0.	0.	7.8565E-01	8.5500E-01
400 410	0.	1.7750E-01	1.4732E 00	1.6507E 00
410 420	0.	4.3815E-01	2.6257E 00	3.0162E 00
420 430	0.	9.6750E-01	4.4182E 00	5.2137E 00
430 440	8.2325E 00	1.8975E 00	6.7237E 00	8.0850E 00
440 450	1.0041E 01	3.0812E 00	8.5000E 00	1.0412E 01
450 460	1.0399E 01	4.2300E 00	9.1650E 00	1.1397E 01
460 470	9.9287E 00	5.1700E 00	8.8712E 00	1.1162E 01
470 480	8.9175E 00	5.4375E 00	7.8844E 00	1.0114E 01
480 490	7.7068E 00	5.2525E 00	6.5895E 00	8.5950E 00
490 500	6.5163E 00	4.9867E 00	5.2729E 00	7.0305E 00
500 510	5.4325E 00	4.3725E 00	3.9419E 00	5.3662E 00
510 520	4.4406E 00	3.5525E 00	2.8100E 00	3.8062E 00
520 530	3.5340E 00	2.8120E 00	1.9380E 00	2.6600E 00
530 540	2.5546E 00	2.0597E 00	1.2171E 00	1.7387E 00
540 550	1.7040E 00	1.4022E 00	7.1000E-01	1.0295E 00
550 560	1.1040E 00	9.2575E-01	1.9675E-01	5.7500E-01
560 570	7.2819E-01	6.2144E-01	2.2494E-01	3.2406E-01
570 580	4.5325E-01	4.0425E-01	1.2005E-01	1.7640E-01
580 590	2.5080E-01	2.3797E-01	5.6430E-02	8.4075E-02
590 600	1.4875E-01	1.4787E-01	2.5950E-02	4.0250E-02
600 610	9.2475E-02	9.6187E-02	1.2712E-02	1.8900E-02
610 620	0.	0.	0.	0.
620 630	0.	0.	0.	0.
630 640	0.	0.	0.	0.
640 650	0.	0.	0.	0.
650 660	0.	0.	0.	0.
660 670	0.	0.	0.	0.
670 680	0.	0.	0.	0.
680 690	0.	0.	0.	0.
690 700	0.	0.	0.	0.
700 710	0.	0.	0.	0.
710 720	0.	0.	0.	0.
720 730	0.	0.	0.	0.
730 740	0.	0.	0.	0.
SUM	8.2325E 01	4.8271E 01	7.4581E 01	9.4207E 01

TABLE 19C.

SPECTRAL EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS
[PHOTOELECTRONS/10 KV-ELECTRON]

LAMBDA	P-11 S-17	P-11 VARIAN	P-11 S-20IF	P-11 GA AS
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.	0.	0.
310 320	0.	0.	0.	0.
320 330	0.	0.	0.	0.
330 340	0.	0.	0.	0.
340 350	0.	0.	0.	0.
350 360	0.	0.	0.	0.
360 370	2.3617E-01	0.	1.4070E-01	2.9145E-01
370 380	4.2600E-01	0.	1.9200E-01	5.4600E-01
380 390	7.7577E-01	0.	3.4720E-01	1.0090E 00
390 400	1.3775E 00	0.	6.8400E-01	1.7955E 00
400 410	2.6092E 00	9.4962E-01	1.4732E 00	3.3902E 00
410 420	4.7307E 00	1.8732E 00	3.1750E 00	6.1277E 00
420 430	8.1700E 00	3.3594E 00	6.5037E 00	1.0427E 01
430 440	1.2787E 01	5.3212E 00	1.2210E 01	1.6005E 01
440 450	1.6787E 01	6.8531E 00	1.9125E 01	2.0612E 01
450 460	1.8917E 01	7.4025E 00	2.3735E 01	2.2795E 01
460 470	1.9152E 01	7.2262E 00	2.4557E 01	2.2795E 01
470 480	1.7944E 01	6.5794E 00	2.2185E 01	2.1097E 01
480 490	1.5853E 01	5.6345E 00	1.6903E 01	1.8527E 01
490 500	1.3570E 01	4.6597E 00	9.8917E 00	1.5859E 01
500 510	1.0997E 01	3.6437E 00	3.8425E 00	1.2852E 01
510 520	8.3737E 00	2.7151E 00	1.1165E 00	9.8455E 00
520 530	6.0800E 00	1.9760E 00	4.1230E-01	7.3340E 00
530 540	4.0660E 00	1.3375E 00	1.9795E-01	5.1360E 00
540 550	2.4672E 00	8.5200E-01	1.3401E-01	3.3902E 00
550 560	1.3800E 00	5.3475E-01	1.2650E-01	2.1850E 00
560 570	7.1675E-01	3.4312E-01	1.3725E-01	1.4411E 00
570 580	3.3320E-01	2.1070E-01	1.2495E-01	9.1630E-01
580 590	1.3680E-01	1.1427E-01	8.9775E-02	5.2725E-01
590 600	5.6000E-02	7.0000E-02	6.5625E-02	3.2025E-01
600 610	2.5425E-02	4.3312E-02	4.9500E-02	2.0362E-01
610 620	0.	0.	0.	0.
620 630	0.	0.	0.	0.
630 640	0.	0.	0.	0.
640 650	0	0.	0.	0.
650 660	0.	0.	0.	0.
660 670	0.	0.	0.	0.
670 680	0.	0.	0.	0.
680 690	0.	0.	0.	0.
690 700	0.	0.	0.	0.
700 710	0.	0.	0.	0.
710 720	0.	0.	0.	0.
720 730	0.	0.	0.	0.
730 740	0.	0.	0.	0.
SUM	1.6797E 02	6.1704E 01	1.4742E 02	2.0543E 02

TABLE 19D.

SPECTRAL EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS
[PHOTOELECTRONS/10 KV-ELECTRON]

LAMBDA	P-11 S-25H2	P-11 VARO	P-11 S-25T1	P-11 S-25T2
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.	0.	0.
310 320	0.	0.	0.	0.
320 330	0.	0.	0.	0.
330 340	0.	0.	0.	0.
340 350	0.	0.	0.	0.
350 360	0.	0.	0.	0.
360 370	0.	0.	0.	0.
370 380	0.	0.	0.	0.
380 390	0.	0.	0.	0.
390 400	0.	0.	0.	0.
400 410	0.	1.7750E-01	0.	0.
410 420	0.	4.3815E-01	0.	0.
420 430	0.	9.6750E-01	3.9237E 00	5.0256E 00
430 440	1.5262E 00	1.8975E 00	6.2287E 00	8.2087E 00
440 450	2.3906E 00	3.0812E 00	8.2875E 00	1.1316E 01
450 460	3.2665E 00	4.2300E 00	9.4000E 00	1.3512E 01
460 470	3.9480E 00	5.1700E 00	9.5175E 00	1.4511E 01
470 480	4.1542E 00	5.4375E 00	8.7761E 00	1.4246E 01
480 490	4.0301E 00	5.2525E 00	7.6113E 00	1.3131E 01
490 500	3.7768E 00	4.9867E 00	6.3928E 00	1.1608E 01
500 510	3.2860E 00	4.3725E 00	5.0814E 00	9.6394E 00
510 520	2.6339E 00	3.5525E 00	3.8316E 00	7.5110E 00
520 530	2.0406E 00	2.8120E 00	2.8120E 00	5.6240E 00
530 540	1.4873E 00	2.0[illegible]97E 00	1.9394E 00	3.8921E 00
540 550	1.0135E 00	1.4022E 00	1.2602E 00	2.5116E 00
550 560	6.6815E-01	9.2575E-01	7.9580E-01	1.5640E 00
560 570	4.5292E-01	6.2144E-01	5.1621E-01	9.9125E-01
570 580	2.9841E-01	4.0425E-01	3.2585E-01	6.1495E-01
580 590	1.7841E-01	2.3797E-01	1.8382E-01	3.4200E-01
590 600	1.1270E-01	1.4787E-01	1.0885E-01	1.9775E-01
600 610	7.4025E-02	9.6187E-02	6.8287E-02	1.2037E-01
610 620	0.	0.	0.	0.
620 630	0.	0.	0.	0.
630 640	0.	0.	0.	0.
640 650	0.	0.	0.	0.
650 660	0.	0.	0.	0.
660 670	0.	0.	0.	0.
670 680	0.	0.	0.	0.
680 690	0.	0.	0.	0.
690 700	0.	0.	0.	0.
700 710	0.	0.	0.	0.
710 720	0.	0.	0.	0.
720 730	0.	0.	0.	0.
730 740	0.	0.	0.	0.
SUM	3.5339E 01	4.8271E 01	7.7061E 01	1.2457E 02

TABLE 20A.

SPECTRAL EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS
[PHOTOELECTRONS/10 KV-ELECTRON]

LAMBDA	P-16 S-1	P-16 S-20	P-16 S-20R	P-16 S-25
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.	0.	0.
310 320	0.	0.	0.	0.
320 330	0.	0.	0.	0.
330 340	0.	0.	0.	0.
340 350	0.	0.	0.	0.
350 360	1.1040E-01	1.5200E 00	1.5200E 00	1.0560E 00
360 370	2.0740E-01	3.2025E 00	3.2025E 00	2.1960E 00
370 380	2.2272E-01	4.3412E 00	4.3412E 00	2.8312E 00
380 390	1.8565E-01	4.7795E 00	4.7795E 00	3.0415E 00
390 400	1.2920E-01	4.7310E 00	4.7310E 00	3.0400E 00
400 410	7.3600E-02	4.1120E 00	4.1120E 00	2.6880E 00
410 420	3.4545E-02	3.0785E 00	3.0785E 00	2.0327E 00
420 430	1.6120E-02	2.0460E 00	2.0460E 00	1.3562E 00
430 440	7.8750E-03	1.1375E 00	1.1375E 00	7.6562E-01
440 450	3.9100E-03	5.8420E-01	5.8420E-01	3.9790E-01
450 460	1.9505E-03	2.925 E-01	2.9257E-01	1.9975E-01
460 470	0.	0.	0.	0.
470 480	0.	0.	0.	0.
480 490	0.	0.	0.	0.
490 500	0.	0.	0.	0.
500 510	0.	0.	0.	0.
510 520	0.	0.	0.	0.
520 530	0.	0.	0.	0.
530 540	0.	0.	0.	0.
540 550	0.	0.	0.	0.
550 560	0.	0.	0.	0.
560 570	0.	0.	0.	0.
570 580	0.	0.	0.	0.
580 590	0.	0.	0.	0.
590 600	0.	0.	0.	0.
600 610	0.	0.	0.	0.
610 620	0.	0.	0.	0.
620 630	0.	0.	0.	0.
630 640	0.	0.	0.	0.
640 650	0.	0.	0.	0.
650 660	0.	0.	0.	0.
660 670	0.	0.	0.	0.
670 680	0.	0.	0.	0.
680 690	0.	0.	0.	0.
690 700	0.	0.	0.	0.
700 710	0.	0.	0.	0.
710 720	0.	0.	0.	0.
720 730	0.	0.	0.	0.
730 740	0.	0.	0.	0.
SUM	9.9338E-01	2.9825E 01	2.9825E 01	1.9605E 01

TABLE 20B.

SPECTRAL EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS
[PHOTOELECTRONS/10 KV-ELECTRON]

LAMBDA	P-16 S-25H1	P-16 VARO	P-16 S-4	P-16 S-11
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.	0.	0.
310 320	0.	0.	0.	0.
320 330	0.	0.	0.	0.
330 340	0.	0.	0.	0.
340 350	0.	0.	0.	0.
350 360	0.	0.	1.1690E 00	1.0880E 00
360 370	0.	0.	2.3332E 00	2.3790E 00
370 380	0.	0.	3.0011E 00	3.1710E 00
380 390	0.	0.	3.2271E 00	3.4365E 00
390 400	0.	0.	3.1426E 00	3.4200E 00
400 410	0.	3.2000E-01	2.6560E 00	2.9760E 00
410 420	0.	3.2430E-01	1.9434E 00	2.2325E 00
420 430	0.	2.7900E-01	1.2741E 00	1.5035E 00
430 440	8.8375E-01	2.0125E-01	7.1312E-01	8.5750E-01
440 450	4.3470E-01	1.3340E-01	3.6800E-01	4.5080E-01
450 460	2.0797E-01	8.4600E-02	1.8330E-01	2.2795E-01
460 470	0.	0.	0.	0.
470 480	0.	0.	0.	0.
480 490	0.	0.	0.	0.
490 500	0.	0.	0.	0.
500 510	0.	0.	0.	0.
510 520	0.	0.	0.	0.
520 530	0.	0.	0.	0.
530 540	0.	0.	0.	0.
540 550	0.	0.	0.	0.
550 560	0.	0.	0.	0.
560 570	0.	0.	0.	0.
570 580	0.	0.	0.	0.
580 590	0.	0.	0.	0.
590 600	0.	0.	0.	0.
600 610	0.	0.	0.	0.
610 620	0.	0.	0.	0.
620 630	0.	0.	0.	0.
630 640	0.	0.	0.	0.
640 650	0.	0.	0.	0.
650 660	0.	0.	0.	0.
660 670	0.	0.	0.	0.
670 680	0.	0.	0.	0.
680 690	0.	0.	0.	0.
690 700	0.	0.	0.	0.
700 710	0.	0.	0.	0.
710 720	0.	0.	0.	0.
720 730	0.	0.	0.	0.
730 740	0.	0.	0.	0.
SUM	1.5264E 00	1.3425E 00	2.0010E 01	2.1743E 01

TABLE 20C.

SPECTRAL EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS
[PHOTOELECTRONS/10 KV-ELECTRON]

LAMBDA	P-16 S-17	P-16 VARIAN	P-16 S-20IF	P-16 GA AS
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.	0.	0.
310 320	0.	0.	0.	0.
320 330	0.	0.	0.	0.
330 340	0.	0.	0.	0.
340 350	0.	0.	0.	0.
350 360	2.2080E 00	0.	0.	2.5760E 00
360 370	4.3005E 00	0.	2.5620E 00	5.3070E 00
370 380	5.3605E 00	0.	2.4160E 00	6.8705E 00
380 390	5.6485E 00	0.	2.5280E 00	7.3470E 00
390 400	5.5100E 00	0.	2.7360E 00	7.1820E 00
400 410	4.7040E 00	1.7120E 00	2.6560E 00	6.1120E 00
410 420	3.5015E 00	1.3865E 00	2.3500E 00	4.5355E 00
420 430	2.3560E 00	9.6875E-01	1.8755E 00	3.0070E 00
430 440	1.3562E 00	5.6437E-01	1.2950E 00	1.6975E 00
440 450	7.2680E-01	2.9670E-01	8.2800E-01	8.9240E-01
450 460	3.7835E-01	1.4805E-01	4.7470E-01	4.5590E-01
460 470	0.	0.	0.	0.
470 480	0.	0.	0.	0.
480 490	0.	0.	0.	0.
490 500	0.	0.	0.	0.
500 510	0.	0.	0.	0.
510 520	0.	0.	0.	0.
520 530	0.	0.	0.	0.
530 540	0.	0.	0.	0.
540 550	0.	0.	0.	0.
550 560	0.	0.	0.	0.
560 570	0.	0.	0.	0.
570 580	0.	0.	0.	0.
580 590	0.	0.	0.	0.
590 600	0.	0.	0.	0.
600 610	0.	0.	0.	0.
610 620	0.	0.	0.	0.
620 630	0.	0.	0.	0.
630 640	0.	0.	0.	0.
640 650	0.	0.	0.	0.
650 660	0.	0.	0.	0.
660 670	0.	0.	0.	0.
670 680	0.	0.	0.	0.
680 690	0.	0.	0.	0.
690 700	0.	0.	0.	0.
700 710	0.	0.	0.	0.
710 720	0.	0.	0.	0.
720 730	0.	0.	0.	0.
730 740	0.	0.	0.	0.
SUM	3.6050E 01	5.0764E 00	1.9721E 01	4.5983E 01

TABLE 20D.

SPECTRAL EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS
[PHOTOELECTRONS/10 KV-ELECTRON]

LAMBDA		P-16 S-25H2	P-16 VARO	P-16 S-25T1	P-16 S-25T2
250	260	0.	0.	0.	0.
260	270	0.	0.	0.	0.
270	280	0.	0.	0.	0.
280	290	0.	0.	0.	0.
290	300	0.	0.	0.	0.
300	310	0.	0.	0.	0.
310	320	0.	0.	0.	0.
320	330	0.	0.	0.	0.
330	340	0.	0.	0.	0.
340	350	0.	0.	0.	0.
350	360	0.	0.	0.	0.
360	370	0.	0.	0.	0.
370	380	0.	0.	0.	0.
380	390	0.	0.	0.	0.
390	400	0.	0.	0.	0.
400	410	0.	3.2000E-01	0.	0.
410	420	0.	3.2430E-01	0.	0.
420	430	0.	2.7900E-01	1.1315E 00	1.4492E 00
430	440	1.6187E-01	2.0125E-01	6.6062E-01	8.7062E-01
440	450	1.0350E-01	1.3340E-01	3.5880E-01	4.8990E-01
450	460	6.5330E-02	8.4600E-02	1.8800E-01	2.7025E-01
460	470	0.	0.	0.	0.
470	480	0.	0.	0.	0.
480	490	0.	0.	0.	0.
490	500	0.	0.	0.	0.
500	510	0.	0.	0.	0.
510	520	0.	0.	0.	0.
520	530	0.	0.	0.	0.
530	540	0.	0.	0.	0.
540	550	0.	0.	0.	0.
550	560	0.	0.	0.	0.
560	570	0.	0.	0.	0.
570	580	0.	0.	0.	0.
580	590	0.	0.	0.	0.
590	600	0.	0.	0.	0.
600	610	0.	0.	0.	0.
610	620	0.	0.	0.	0.
620	630	0.	0.	0.	0.
630	640	0.	0.	0.	0.
640	650	0.	0.	0.	0.
650	660	0.	0.	0.	0.
660	670	0.	0.	0.	0.
670	680	0.	0.	0.	0.
680	690	0.	0.	0.	0.
690	700	0.	0.	0.	0.
700	710	0.	0.	0.	0.
710	720	0.	0.	0.	0.
720	730	0.	0.	0.	0.
730	740	0.	0.	0.	0.
SUM		3.3070E-01	1.3425E 00	2.3389E 00	3.0800E 00

TABLE 21A.

SPECTRAL EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS
[PHOTOELECTRONS/10 KV-ELECTRON]

LAMBDA	P-20 S-1	P-20 S-20	P-20 S-20R	P-20 S-25
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.	0.	0.
310 320	0.	0.	0.	0.
320 330	0.	0.	0.	0.
330 340	0.	0.	0.	0.
340 350	0.	0.	0.	0.
350 360	0.	0.	0.	0.
360 370	0.	0.	0.	0.
370 380	0.	0.	0.	0.
380 390	0.	0.	0.	0.
390 400	0.	0.	0.	0.
400 410	0.	0.	0.	0.
410 420	0.	0.	0.	0.
420 430	0.	0.	0.	0.
430 440	0.	0.	0.	0.
440 450	0.	0.	0.	0.
450 460	0.	0.	0.	0.
460 470	0.	0.	0.	0.
470 480	2.7837E-03	3.7499E-01	3.7499E-01	2.7019E-01
480 490	5.3169E-03	6.5800E-01	6.5800E-01	4.7587E-01
490 500	1.0712E-02	1.1799E 00	1.1799E 00	8.5912E-01
500 510	2.1465E-02	2.1060E 00	2.1667E 00	1.5592E 00
510 520	3.7905E-02	3.3084E 00	3.5245E 00	2.5104E 00
520 530	5.6887E-02	4.4169E 00	4.7175E 00	3.4456E 00
530 540	7.4812E-02	5.1469E 00	5.5125E 00	4.1062E 00
540 550	9.0000E-02	5.4375E 00	5.8125E 00	4.4375E 00
550 560	1.0401E-01	5.4987E 00	5.8300E 00	4.5845E 00
560 570	1.1329E-01	5.3000E 00	5.6312E 00	4.4917E 00
570 580	1.1470E-01	4.7120E 00	5.0840E 00	4.1168E 00
580 590	1.0854E-01	3.8340E 00	4.1580E 00	3.4992E 00
590 600	1.0065E-01	3.0652E 00	3.2940E 00	2.8914E 00
600 610	8.9300E-02	2.4130E 00	2.6220E 00	2.3332E 00
610 620	7.5000E-02	1.8000E 00	1.9800E 00	1.7760E 00
620 630	6.2275E-02	1.3160E 00	1.4570E 00	1.3395E 00
630 640	5.0400E-02	9.3600E-01	1.0530E 00	9.9000E-01
640 650	4.1250E-02	6.6000E-01	7.4937E-01	7.3562E-01
650 660	3.3200E-02	4.5650E-01	5.1875E-01	5.3950E-01
660 670	2.5962E-02	3.0767E-01	3.6812E-01	3.9137E-01
670 680	2.1300E-02	2.1420E-01	2.7300E-01	2.9400E-01
680 690	1.6969E-02	1.4616E-01	1.9005E-01	2.1041E-01
690 700	1.2804E-02	9.4050E-02	1.2540E-01	1.4520E-01
700 710	9.6720E-03	5.9280E-02	8.4000E-02	1.0080E-01
710 720	7.0550E-03	3.6890E-02	5.4400E-02	6.8000E-02
720 730	4.9450E-03	2.1275E-02	3.2775E-02	4.3700E-02
730 740	0.	0.	0.	0.
SUM	1.2912E 00	5.3500E 01	5.7452E 01	4.6215E 01

TABLE 21B.

SPECTRAL EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS
[PHOTOELECTRONS/10 KV-ELECTRON]

LAMBDA	P-20 S-25HI	P-20 VARO	P-20 S-4	P-20 S-11
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.	0.	0.
310 320	0.	0.	0.	0.
320 330	0.	0.	0.	0.
330 340	0.	0.	0.	0.
340 350	0.	0.	0.	0.
350 360	0.	0.	0.	0.
360 370	0.	0.	0.	0.
370 380	0.	0.	0.	0.
380 390	0.	0.	0.	0.
390 400	0.	0.	0.	0.
400 410	0.	0.	0.	0.
410 420	0.	0.	0.	0.
420 430	0.	0.	0.	0.
430 440	0.	0.	0.	0.
440 450	0.	0.	0.	0.
450 460	0.	0.	0.	0.
460 470	0.	0.	0.	0.
470 480	2.6855E-01	1.6375E-01	2.3744E-01	3.0457E-01
480 490	4.7411E-01	3.2312E-01	4.0537E-01	5.2875E-01
490 500	8.7217E-01	6.6337E-01	7.0144E-01	9.3525E-01
500 510	1.6605E 00	1.3365E 00	1.2049E 00	1.6402E 00
510 520	2.9094E 00	2.3275E 00	1.8454E 00	2.4937E 00
520 530	4.3012E 00	3.4225E 00	2.3587E 00	3.2375E 00
530 540	5.3719E 00	4.3312E 00	2.5594E 00	3.6562E 00
540 550	6.0000E 00	4.9375E 00	2.5000E 00	3.6250E 00
550 560	6.3600E 00	5.3331E 00	2.2856E 00	3.3125E 00
560 570	6.3269E 00	5.3994E 00	1.9544E 00	2.8156E 00
570 580	5.7350E 00	5.1150E 00	1.5190E 00	2.2320E 00
580 590	4.7520E 00	4.5090E 00	1.0692E 00	1.5930E 00
590 600	3.8887E 00	3.8659E 00	7.0455E 01	1.0522E 00
600 610	3.1236E 00	3.2490E 00	4.2940E-01	6.3840E-01
610 620	2.3550E 00	2.5950E 00	2.3400E-01	3.3600E-01
620 630	1.7578E 00	2.0562E 00	1.2220E-01	1.6920E-01
630 640	1.2978E 00	1.5930E 00	6.3000E-02	7.9200E-02
640 650	9.7075E-01	1.2306E 00	0.	3.4375E-02
650 660	7.2002E-01	9.3894E-01	0.	1.5562E-02
660 670	5.2545E-01	7.0912E-01	0.	7.7500E-03
670 680	3.9420E-01	5.5500E-01	0.	8.0400E-03
680 690	2.8734E-01	4.2309E-01	0.	6.9685E-03
690 700	2.0196E-01	3.1350E-01	0.	2.9040E-03
700 710	1.3920E-01	2.3280E-01	0.	1.2240E-03
710 720	9.2140E-02	1.6830E-01	0.	7.1400E-04
720 730	5.7270E-02	1.2500E-01	0.	0.
730 740	0.	0.	0.	0.
SUM	6.0843E 01	5.5507E 01	2.0194E 01	2.8727E 01

TABLE 21C.

SPECTRAL EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS
[PHOTOELECTRONS/10 KV-ELECTRON]

LAMBDA	P-20 S-17	P-20 VARIAN	P-20 S-20IF	P-20 GA AS
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.	0.	0.
310 320	0.	0.	0.	0.
320 330	0.	0.	0.	0.
330 340	0.	0.	0.	0.
340 350	0.	0.	0.	0.
350 360	0.	0.	0.	0.
360 370	0.	0.	0.	0.
370 380	0.	0.	0.	0.
380 390	0.	0.	0.	0.
390 400	0.	0.	0.	0.
400 410	0.	0.	0.	0.
410 420	0.	0.	0.	0.
420 430	0.	0.	0.	0.
430 440	0.	0.	0.	0.
440 450	0.	0.	0.	0.
450 460	0.	0.	0.	0.
460 470	0.	0.	0.	0.
470 480	5.4037E-01	1.9814E-01	6.6810E-01	6.3535E-01
480 490	9.7525E-01	3.4662E-01	1.0399E 00	1.1397E 00
490 500	1.8052E 00	6.1987E-01	1.3159E 00	2.1097E 00
500 510	3.3615E 00	1.1137E 00	1.1745E 00	3.9285E 00
510 520	5.4862E 00	1.7789E 00	7.3150E-01	6.4505E 00
520 530	7.4000E 00	2.4050E 00	5.0181E-01	8.9262E 00
530 540	8.5500E 00	2.8125E 00	4.1625E-01	1.0800E 01
540 550	8.6875E 00	3.0000E 00	4.7187E-01	1.1937E 01
550 560	7.9500E 00	3.0806E 00	7.2875E-01	1.2587E 01
560 570	6.2275E 00	2.9812E 00	1.1925E 00	1.2521E 01
570 580	4.2160E 00	2.6660E 00	1.5810E 00	1.1594E 01
580 590	2.5920E 00	2.2410E 00	1.7010E 00	9.9900E 00
590 600	1.4640E 00	1.8300E 00	1.7156E 00	8.3722E 00
600 610	8.5880E-01	1.4630E 00	1.6720E 00	6.8780E 00
610 620	4.9800E-01	1.1100E 00	1.5150E 00	5.3400E 00
620 630	2.9845E-01	8.3425E-01	1.3277E 00	4.1125E 00
630 640	1.8540E-01	6.2100E-01	1.1250E 00	3.1140E 00
640 650	1.1275E-01	4.5375E-01	9.4875E-01	2.3512E 00
650 660	6.0175E-02	3.2681E-01	7.7294E-01	1.7430E 00
660 670	2.8675E-02	2.3637E-01	6.1612E-01	1.2632E 00
670 680	1.6200E-02	1.7700E-01	5.0400E-01	9.4200E-01
680 690	0.	1.3122E-01	4.0272E-01	6.9232E-01
690 700	0.	9.0750E-02	3.0690E-01	4.9170E-01
700 710	0.	6.1200E-02	2.2800E-01	3.4800E-01
710 720	0.	4.1650E-02	1.6150E-01	2.3800E-01
720 730	0.	2.7025E-02	1.0695E-01	1.5410E-01
730 740	0.	0.	0.	0.
SUM	6.1314E 01	3.0648E 01	2.2926E 01	1.2866E 02

TABLE 21D.

SPECTRAL EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS
[PHOTOELECTRONS/10 KV-ELECTRON]

LAMBDA		P-20 S-25H2	P-20 VARO	P-20 S-25T1	P-20 S-25T2
250	260	0.	0.	0.	0.
260	270	0.	0.	0.	0.
270	280	0.	0.	0.	0.
280	290	0.	0.	0.	0.
290	300	0.	0.	0.	0.
300	310	0.	0.	0.	0.
310	320	0.	0.	0.	0.
320	330	0.	0.	0.	0.
330	340	0.	0.	0.	0.
340	350	0.	0.	0.	0.
350	360	0.	0.	0.	0.
360	370	0.	0.	0.	0.
370	380	0.	0.	0.	0.
380	390	0.	0.	0.	0.
390	400	0.	0.	0.	0.
400	410	0.	0.	0.	0.
410	420	0.	0.	0.	0.
420	430	0.	0.	0.	0.
430	440	0.	0.	0.	0.
440	450	0.	0.	0.	0.
450	460	0.	0.	0.	0.
460	470	0.	0.	0.	0.
470	480	1.2510E-01	1.6375E-01	2.6429E-01	4.2902E-01
480	490	2.4792E-01	3.2312E-01	4.6824E-01	8.0781E-01
490	500	5.0242E-01	6.6337E-01	8.5042E-01	1.5442E 00
500	510	1.0044E 00	1.3365E 00	1.5532E 00	2.9464E 00
510	520	1.7257E 00	2.3275E 00	2.5104E 00	4.9210E 00
520	530	2.4836E 00	3.4225E 00	3.4225E 00	6.8450E 00
530	540	3.1275E 00	4.3312E 00	4.0781E 00	8.1844E 00
540	550	3.5687E 00	4.9375E 00	4.4375E 00	8.8437E 00
550	560	3.8491E 00	5.3331E 00	4.5845E 00	9.0100E 00
560	570	3.9352E 00	5.3994E 00	4.4851E 00	8.6125E 00
570	580	3.7758E 00	5.1150E 00	4.1230E 00	7.7810E 00
580	590	3.3804E 00	4.5090E 00	3.4830E 00	6.4800E 00
590	600	2.9463E 00	3.8659E 00	2.8456E 00	5.1697E 00
600	610	2.5004E 00	3.2490E 00	2.3066E 00	4.0660E 00
610	620	2.0070E 00	2.5950E 00	1.7700E 00	3.0750E 00
620	630	1.5956E 00	2.0562E 00	1.3207E 00	2.2795E 00
630	640	1.2420E 00	1.5930E 00	9.6120E-01	1.6290E 00
640	650	9.6387E-01	1.2306E 00	7.0675E-01	1.1687E 00
650	660	7.3870E-01	9.3894E-01	5.0734E-01	8.3000E-01
660	670	5.5877E-01	7.0912E-01	3.6192E-01	5.8900E-01
670	680	4.3560E-01	5.5500E-01	2.6820E-01	4.3020E-01
680	690	3.3078E-01	4.2309E-01	1.9095E-01	3.0860E-01
690	700	2.4288E-01	3.1350E-01	1.3266E-01	2.1450E-01
700	710	1.7784E-01	2.3280E-01	9.3360E-02	1.5000E-01
710	720	1.2631E-01	1.6830E-01	6.4090E-02	1.0319E-01
720	730	8.5215E-02	1.1500E-01	4.1630E-02	6.7160E-02
730	740	0.	0.	0.	0.
SUM		4.1677E 01	5.5907E 01	4.5831E 01	3.6486E 01

TABLE 22A.

SPECTRAL EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS
[PHOTOELECTRONS/10 KV-ELECTRON]

LAMBDA	P-22B S-1	P-22B S-20	P-22B S-20R	P-22B S-25
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.	0.	0.
310 320	0.	0.	0.	0.
320 330	0.	0.	0.	0.
330 340	0.	0.	0.	0.
340 350	0.	0.	0.	0.
350 360	0.	0.	0.	0.
360 370	1.4620E-02	2.2575E-01	2.2575E-01	1.5480E-01
370 380	2.1682E-02	4.2262E-01	4.2262E-01	2.7562E-01
380 390	2.9962E-02	7.7137E-01	7.7137E-01	4.9087E-01
390 400	3.7825E-02	1.3851E 00	1.3851E 00	8.9000E-01
400 410	4.7725E-02	2.6664E 00	2.6664E 00	1.7430E 00
410 420	5.5125E-02	4.9125E 00	4.9125E 00	3.2437E 00
420 430	6.3700E-02	8.0850E 00	8.0850E 00	5.3594E 00
430 440	8.3250E-02	1.2025E 01	1.2025E 01	8.0937E [illegible]
440 450	1.0094E-01	1.5081E 01	1.5081E 01	1.0272E 01
450 460	1.0064E-01	1.5096E 01	1.5096E 01	1.0306E 01
460 470	8.0925E-02	1.1651E 01	1.1651E 01	8.141[illegible]E 00
470 480	5.4719E-02	7.3709E 00	7.3709E 00	5.310[illegible]E 00
480 490	3.6087E-02	4.4660E 00	4.4660E 00	3.2299E 00
490 500	2.5117E-02	2.7667E 00	2.7667E 00	2.0145E 00
500 510	1.[illegible]960E-02	1.6640E 00	1.7120E 00	1.232[illegible] 00
510 520	1.0972E-02	9.5769E-01	1.0202E 00	7.26[illegible] 01
520 530	7.2262E-03	5.6106E-01	5.9925E-01	4.3[illegible]6 01
530 540	4.6882E-03	3.2254E-01	3.4545E-01	2.5732[illegible] [illegible]1
540 550	2.8440E-03	1.7182E-01	1.8367E-01	1.4022E[illegible]
550 560	0.	0.	0.	0.
560 570	0.	0.	0.	0.
570 580	0.	0.	0.	0.
580 590	0.	0.	0.	0.
590 600	0.	0.	0.	0.
600 610	0.	0.	0.	0.
610 620	0.	0.	0.	0.
620 630	0.	0.	0.	0.
630 640	0.	0.	0.	0.
640 650	0.	0.	0.	0.
650 660	0.	0.	0.	0.
660 670	0.	0.	0.	0.
670 680	0.	0	0.	0.
680 690	0.	0.	0.	0.
690 700	0.	0.	0.	0.
700 710	0.	0.	0.	0.
710 720	0.	0.	0.	0.
720 730	0.	0.	0.	0.
730 740	0.	0.	0.	0.
SUM	7.9500E-01	9.0[illegible]3E [illegible]1	9.0786E 01	[illegible].[illegible]320[illegible] 01

TABLE 22B.

SPECTRAL EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS
[PHOTOELECTRONS/10 KV-ELECTRON]

LAMBDA	P-22B S-25H1	P-22B VARO	P-22B S-4	P-22B S-11
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.	0.	0.
310 320	0.	0.	0.	0.
320 330	0.	0.	0.	0.
330 340	0.	0.	0.	0.
340 350	0.	0.	0.	0.
350 360	0.	0.	0.	0.
360 370	0.	0.	1.6447E-01	1.6770E-01
370 380	0.	0.	2.9216E-01	3.0870E-01
380 390	0.	0.	5.2084E-01	5.5462E-01
390 400	0.	0.	9.2004E-01	1.0012E 00
400 410	0.	2.0750E-01	1.722[illegible] 00	1.9297E 00
410 420	0.	5.1750E-01	3.1012E 00	3.5625E 00
420 430	0.	1.1025E 00	5.0347E 00	5.9412E 00
430 440	9.3425E 00	2.1275E 00	7.5387E 00	9.0650E 00
440 450	1.1222E 01	3.4437E 00	9.5000E 00	1.1637E 01
450 460	1.0731E 01	[illegible].3650E 00	9.4575E 00	1.1761E 01
460 470	8.2387E 00	4.2900E 00	7.3612E 00	9.2625E 00
470 480	5.2787E 00	3.2187E 00	4.6672E 00	5.9869E 00
480 490	3.2179E 00	2.1931E 00	2.7514E 00	3.5887E 00
490 500	2.0451E 00	1.5555E 00	1.6447E 00	2.1930E 00
500 510	1.3120E 00	1.0560E 00	9.5200E-01	1.2960E 00
510 520	8.4219E-01	6.7375E-01	5.3419E-01	7.2187E-01
520 530	5.4637E-01	4.3475E-01	2.9962E-01	4.1125E-01
530 540	3.3664E-01	2.7142E-01	1.6039E-01	2.2912E-01
540 550	1.8960E-01	1.5602E-01	7.9000E-02	1.1455E-01
550 560	0.	0.	0.	0.
560 570	0.	0.	0.	0.
570 580	0.	0.	0.	0.
580 590	0.	0.	0.	0.
590 600	0.	0.	0.	0.
600 610	0.	0.	0.	0.
610 620	0.	0.	0.	0.
620 630	0.	0.	0.	0.
630 640	0.	0.	0.	0.
640 650	0.	0.	0.	0.
650 660	0.	0.	0.	0.
660 670	0.	0.	0.	0.
670 680	0.	0.	0.	0.
680 690	0.	0.	0.	0.
690 700	0.	0.	0.	0.
700 710	0.	0.	0.	0.
710 720	0.	0.	0.	0.
720 730	0.	0.	0.	0.
730 740	0.	0.	0.	0.
S[illegible]	5.3[illegible]E 01	2.561[illegible]E 0[illegible]	[illegible]E 01	6.9733E 01

TABLE 22C.

SPECTRAL EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS
[PHOTOELECTRONS/10 KV-ELECTRON]

LAMBDA	P-22B S-17	P-22B VARIAN	P-22B S-20IF	P-22B GA AS
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0	0.	0.	0.
310 320	0.	0.	0.	0.
320 330	0.	0.	0.	0.
330 340	0.	0.	0.	0.
340 350	0.	0.	0.	0.
350 360	0.	0.	0.	0.
360 370	3.0315E-01	0.	1.8060E-01	3.7410E-01
370 380	5.2185E-01	0.	2.3520E-01	6.6885E-01
380 390	9.1162E-01	0.	4.0800E-01	1.1857E 00
390 400	1.6131E 00	0.	8.0100E-01	2.1026E 00
400 410	3.0502E 00	1.1101E 00	1.7222E 00	3.9632E 00
410 420	5.5875E 00	2.2125E 00	3.7500E 00	7.2375E 00
420 430	9.3100E 00	3.8281E 00	7.4112E 00	1.1882E 01
430 440	1.4337E 01	5.9662E 00	1.3690E 01	1.7945E 01
440 450	1.8762E 01	7.6594E 00	2.1375E 01	2.3037E 01
450 460	1.9521E 01	7.6387E 00	2.4492E 01	2.3522E 01
460 470	1.5892E 01	5.9962E 00	2.0377E 01	1.8915E 01
470 480	1.0622E 01	3.8947E 00	1.3132E 01	1.2489E 01
480 490	6.6192E 00	2.3526E 00	7.0579E 00	7.7357E 00
490 500	4.2330E 00	1.4535E 00	3.0855E 00	4.9470E 00
500 510	2.6560E 00	8.8000E-01	9.2800E-01	3.1040E 00
510 520	1.5881E 00	5.1494E-01	2.1175E-01	1.8672E 00
520 530	9.4000E-01	3.0550E-01	6.3744E-02	1.1339E 00
530 540	5.3580E-01	1.7625E-01	2.6085E-02	6.7680E-01
540 550	2.7452E-01	9.4800E-02	1.4911E-02	3.7722E-01
550 560	0.		0.	0.
560 570	0.		0.	0.
570 580	0.	[illegible]	0.	0.
580 590	0.	0.	0.	0.
590 600	0.	0.	0.	0.
600 610	0.	0.	0.	0.
610 620	0.	0.	0.	0.
620 630	0.	0.	0.	0.
630 640	0.	0.	0.	0.
640 650	0.	0.	0.	0.
650 660	0.	0.	0.	0.
660 670	0.	0.	0.	0.
670 680	0.	0.	0.	0.
680 690	0.	0.	0.	0.
690 700	0.	0.	0.	0.
700 710	0.	0.	0.	0.
710 720	0.	0.	0.	0.
720 730	0.	0.	0.	0.
730 740	0.	0.	0.	0.
SUM	1.1728E 02	4.4084E 01	1.1896E 02	1.4317E 02

TABLE 22D.

SPECTRAL EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS
[PHOTOELECTRONS/10 KV-ELECTRON]

LAMBDA		P-22B S-25H2	P-22B VARO	P-22B S-25T1	P-22B S-25T2
250	260	0.	0.	0.	0.
260	270	0.	0.	0.	0.
270	280	0.	0.	0.	0.
280	290	0.	0.	0.	0.
290	300	0.	0.	0.	0.
300	310	0.	0.	0.	0.
310	320	0.	0.	0.	0.
320	330	0.	0.	0.	0.
330	340	0.	0.	0.	0.
340	350	0.	0.	0.	0.
350	360	0.	0.	0.	0.
360	370	0.	0.	0.	0.
370	380	0.	0.	0.	0.
380	390	0.	0.	0.	0.
390	400	0.	0.	0.	0.
400	410	0.	2.0750E 01	0.	0.
410	420	0.	5.1750E-01	0.	0.
420	430	0.	1.1025E 00	4.4712E 00	5.7269E 00
430	440	1.7112E 00	2.1275E 00	6.9837E 00	9.2037E 00
440	450	2.6719E 00	3.4437E 00	9.2625E 00	1.2647E 01
450	460	3.3707E 00	4.3650E 00	9.7000E 00	1.3944E 01
460	470	3.2760E 00	4.2900E 00	7.8975E 00	1.2041E 01
470	480	2.4591E 00	3.2187E 00	5.1951E 00	8.4331E 00
480	490	1.6827E 00	2.1931E 00	3.1780E 00	5.4828E 00
490	500	1.1781E 00	1.5555E 00	1.9941E 00	3.6210E 00
500	510	7.9360E-01	1.0560E 00	1.2272E 00	2.3280E 00
510	520	4.9954E-01	6.73[illegible]E-01	7.2669E-01	1.4245E 00
520	530	3.1549E-01	4.3475E-01	4.3475E-01	9.6950E-01
530	540	1.9599E-01	2.7142E-01	2.5556E-01	5.1289E-01
540	550	1.1277E-01	1.5602E-01	1.4022E-01	2.7946E-01
550	560	0.	0.	0.	0.
560	570	0.	0.	0.	0.
570	580	0.	0.	0.	0.
580	590	0.	0.	0.	0.
590	600	0.	0.	0.	0.
600	610	0.	0.	0.	0.
610	620	0.	0.	0.	0.
620	630	0.	0.	0.	0.
630	640	0.	0.	0.	0.
640	650	0.	0.	0.	0.
650	660	0.	0.	0.	0.
660	670	0.	0.	0.	0.
670	680	0.	0.	0.	0.
680	690	0.	0.	0.	0.
690	700	0.	0.	0.	0.
700	710	0.	0.	0.	0.
710	720	0.	0.	0.	0.
720	730	0.	0.	0.	0.
730	740	0.	0.	0.	0.
SUM		1.8267E 01	2.[illegible]613E 01	5.1467E 01	7.6514E 01

TABLE 23A.

SPECTRAL EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS
[PHOTOELECTRONS/10 KV-ELECTRON]

LAMBDA	P-22G S-1	P-22G S-20	P-22G S-20R	P-22G S-25
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.	0.	0.
310 320	0.	0.	0.	0.
320 330	0.	0.	0.	0.
330 340	0.	0.	0.	0.
340 350	0.	0.	0.	0.
350 360	0.	0.	0.	0.
360 370	0.	0.	0.	0.
370 380	0.	0.	0.	0.
380 390	0.	0.	0.	0.
390 400	0.	0.	0.	0.
400 410	0.	0.	0.	0.
410 420	0.	0.	0.	0.
420 430	1.3260E-03	1.6830E-01	1.6830E-01	1.1156E-01
430 440	1.8450E-03	2.6650E-01	2.6650E-01	1.7937E-01
440 450	2.7837E-03	4.1592E-01	4.1592E-01	2.8329E-01
450 460	4.4612E-03	6.6919E-01	6.6919E-01	4.5687E-01
460 470	7.5737E-03	1.0904E 00	1.0904E 00	7.6194E-01
470 480	1.2962E-02	1.7461E 00	1.7461E 00	1.2581E 00
480 490	2.3530E-02	2.9120E 00	2.9120E 00	2.1060E 00
490 500	4.3340E-02	4.7740E 00	4.7740E 00	3.4760E 00
500 510	7.0755E-02	6.9420E 00	7.1422E 00	5.1397E 00
510 520	9.6045E-02	8.3929E 00	8.9305E 00	6.3609E 00
520 530	1.1316E-01	8.7860E 00	9.3840E 00	6.6540E 00
530 540	1.2070E-01	8.3036E 00	8.8935E 00	6.6247E 00
540 550	1.1700E-01	7.0687E 00	7.5562E 00	5.7687E 00
550 560	1.0990E-01	5.8100E 00	6.1600E 00	4.8440E 00
560 570	9.8325E-02	4.6000E 00	4.8875E 00	3.8985E 00
570 580	8.0937E-02	3.3250E 00	3.5875E 00	2.9050E 00
580 590	6.8340E-02	2.4140E 00	2.6180E 00	2.2032E 00
590 600	5.9400E-02	1.8090E 00	1.9440E 00	1.7064E 00
600 610	4.7587E-02	1.2859E 00	1.3972E 00	1.2433E 00
610 620	3.6875E-02	8.8500E-01	9.7350E-01	8.7320E-01
620 630	2.8819E-02	6.0900E-01	6.7425E-01	6.1987E-01
630 640	2.2750E-02	4.2250E-01	4.7531E-01	4.4687E-01
640 650	1.8375E-02	2.9400E-01	3.3381E-01	3.2769E-01
650 660	1.4640E-02	2.0130E-01	2.2875E-01	2.3790E-01
660 670	1.1557E-02	1.3696E-01	1.6387E-01	1.7422E-01
670 680	9.4962E-03	9.5497E-02	1.2171E-01	1.3107E-01
680 690	7.7812E-03	6.7022E-02	8.7150E-02	9.6487E-02
690 700	6.1110E-03	4.4887E-02	5.9850E-02	6.9300E-02
700 710	0.	0.	0.	0.
710 720	0.	0.	0.	0.
720 730	0.	0.	0.	0.
730 740	0.	0.	0.	0.
SUM	1.2364E 00	7.3526E 01	7.7661E 01	5.9158E 01

TABLE 23B.

SPECTRAL EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS
[PHOTOELECTRONS/10 KV-ELECTRON]

LAMBDA		P-22G S-25H1	P-22G VARO	P-22G S-4	P-22G S-11
250	260	0.	0.	0.	0.
260	270	0.	0.	0.	0.
270	280	0.	0.	0.	0.
280	290	0.	0.	0.	0.
290	300	0.	0.	0.	0.
300	310	0.	0.	0.	0.
310	320	0.	0.	0.	0.
320	330	0.	0.	0.	0.
330	340	0.	0.	0.	0.
340	350	0.	0.	0.	0.
350	360	0.	0.	0.	0.
360	370	0.	0.	0.	0.
370	380	0.	0.	0.	0.
380	390	0.	0.	0.	0.
390	400	0.	0.	0.	0.
400	410	0.	0.	0.	0.
410	420	0.	0.	0.	0.
420	430	0.	2.2950E-02	1.0480E-01	1.2367E-01
430	440	2.0705E-01	4.7150E-02	1.6707E-01	2.0090E-01
440	450	3.0949E-01	9.4975E-02	2.6200E-01	3.2095E-01
450	460	4.7569E-01	1.9350E-01	4.1925E-01	5.2137E-01
460	470	7.7106E-01	4.0150E-01	6.8894E-01	8.6687E-01
470	480	1.2505E 00	7.6250E-01	1.1056E 00	1.4182E 00
480	490	2.0982E 00	1.4300E 00	1.7940E 00	2.3400E 00
490	500	3.5288E 00	2.6840E 00	2.8380E 00	3.7840E 00
500	510	5.4735E 00	4.4055E 00	3.9716E 00	5.4067E 00
510	520	7.3719E 00	5.8975E 00	4.6759E 00	6.3187E 00
520	530	8.5560E 00	6.8080E 00	4.6920E 00	6.4400E 00
530	540	8.6666E 00	6.9877E 00	4.1291E 00	5.8987E 00
540	550	7.8000E 00	6.4187E 00	3.2500E 00	4.7125E 00
550	560	6.7200E 00	5.6350E 00	2.4150E 00	3.5000E 00
560	570	5.4912E 00	4.6862E 00	1.6962E 00	2.4437E 00
570	580	4.0469E 00	3.6034E 00	1.0719E 00	1.5750E 00
580	590	2.9920E 00	2.8390E 00	6.7320E-01	1.0030E 00
590	600	2.2950E 00	2.2815E 00	4.1580E-01	6.2100E-01
600	610	1.6645E 00	1.7314E 00	2.2082E-01	3.4020E-01
610	620	1.1579E 00	1.2759E 00	1.1505E-01	1.6520E-01
620	630	8.1345E-01	9.5156E-01	5.6550E-02	7.8300E-02
630	640	5.8581E-01	7.1906E-01	2.8437E-02	3.5750E-02
640	650	4.3242E-01	5.4819E-01	0.	1.5312E-02
650	660	3.1750E-01	4.1404E-01	0.	5.8625E-03
660	670	2.3391E-01	3.1567E-01	0.	3.4500E-03
670	680	1.7575E-01	2.4744E-01	0.	3.5845E-03
680	690	1.3176E-01	1.9401E-01	0.	3.1955E-03
690	700	9.6390E-02	1.4962E-01	0.	1.3860E-03
700	710	0.	0.	0.	0.
710	720	0.	0.	0.	0.
720	730	0.	0.	0.	0.
730	740	0.	0.	0.	0.
SUM		7.3663E 01	6.1752E 01	3.4799E 01	4.8149E 01

TABLE 23C.

SPECTRAL EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS
[PHOTOELECTRONS/10 KV-ELECTRON]

LAMBDA	P-22G S-17	P-22G VARIAN	P-22G S-20IF	P-22G GA AS
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.	0.	0.
310 320	0.	0.	0.	0.
320 330	0.	0.	0.	0.
330 340	0.	0.	0.	0.
340 350	0.	0.	0.	0.
350 360	0.	0.	0.	0.
360 370	0.	0.	0.	0.
370 380	0.	0.	0.	0.
380 390	0.	0.	0.	0.
390 400	0.	0.	0.	0.
400 410	0.	0.	0.	0.
410 420	0.	0.	0.	0.
420 430	1.9380E-01	7.9687E-02	1.5427E-01	2.4735E-01
430 440	3.1775E-01	1.3222E-01	3.0340E-01	3.9770E-01
440 450	5.1745E-01	2.1124E-01	5.8950E-01	6.3535E-01
450 460	8.6537E-01	3.3862E-01	1.0857E 00	1.0427E 00
460 470	1.4874E 00	5.6119E-01	1.9071E 00	1.7702E 00
470 480	2.5162E 00	9.2262E-01	3.1110E 00	2.9585E 00
480 490	4.3160E 00	1.5340E 00	4.6020E 00	5.0440E 00
490 500	7.3040E 00	2.5080E 00	5.3240E 00	8.5360E 00
500 510	1.1080E 01	3.6712E 00	3.8715E 00	1.2949E 01
510 520	1.3901E 01	4.5074E 00	1.8535E 00	1.6344E 01
520 530	1.4720E 01	4.7840E 00	9.9820E-01	1.7756E 01
530 540	1.3794E 01	4.5375E 00	6.7155E-01	1.7424E 01
540 550	1.1294E 01	3.9000E 00	6.1344E-01	1.5519E 01
550 560	8.4000E 00	3.2550E 00	7.7000E-01	1.3300E 01
560 570	5.4050E 00	2.5875E 00	1.0350E 00	1.0867E 01
570 580	2.9750E 00	1.8812E 00	1.1156E 00	8.1812E 00
580 590	1.6320E 00	1.4110E 00	1.0710E 00	6.2900E 00
590 600	8.6400E-01	1.0800E 00	1.0125E 00	4.9410E 00
600 610	4.5765E-01	7.7962E-01	8.9100E-01	3.6652E 00
610 620	2.4485E-01	5.4575E-01	7.4487E-01	2.6255E 00
620 630	1.3811E-01	3.8606E-01	6.1444E-01	1.9031E 00
630 640	8.3687E-02	2.8031E-01	5.0781E-01	1.4056E 00
640 650	5.0225E-02	2.0212E-01	4.2262E-01	1.0474E 00
650 660	2.6535E-02	1.4411E-01	3.4084E-01	7.6860E-01
660 670	1.2765E-02	1.0522E-01	2.7427E-01	5.6235E-01
670 680	7.2225E-03	7.8912E-02	2.2470E-01	4.1997E-01
680 690	0.	6.0175E-02	1.8467E-01	3.1747E-01
690 700	0.	4.3312E-02	1.4647E-01	2.3467E-01
700 710	0.	0.	0.	0.
710 720	0.	0.	0.	0.
720 730	0.	0.	0.	0.
730 740	0.	0.	0.	0.
SUM	1.0260E 02	4.0528E 01	3.4441E 01	1.5715E 02

TABLE 23D.

SPECTRAL EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS
[PHOTOELECTRONS/10 KV-ELECTRON]

LAMBDA	P-22G S-25H2	P-22G VARO	P-22G S-25T1	P-22G S-25T2
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.	0.	0.
310 320	0.	0.	0.	0.
320 330	0.	0.	0.	0.
330 340	0.	0.	0.	0.
340 350	0.	0.	0.	0.
350 360	0.	0.	0.	0.
360 370	0.	0.	0.	0.
370 380	0.	0.	0.	0.
380 390	0.	0.	0.	0.
390 400	0.	0.	0.	0.
400 410	0.	0.	0.	0.
410 420	0.	0.	0.	0.
420 430	0.	2.2950E-02	9.3075E-02	1.1921E-01
430 440	3.7925E-02	4.7150E-02	1.5477E-01	2.0397E-01
440 450	7.3687E-02	9.4975E-02	2.5545E-01	3.4879E-01
450 460	1.4942E-01	1.9350E-01	4.3000E-01	6.1812E-01
460 470	3.0660E-01	4.0150E-01	7.3912E-01	1.1269E 00
470 480	5.8255E-01	7.6250E-01	1.2307E 00	1.9977E 00
480 490	1.0972E 00	1.4300E 00	2.0722E 00	3.5750E 00
490 500	2.0328E 00	2.6840E 00	3.4408E 00	6.2480E 00
500 510	3.3108E 00	4.4055E 00	5.1197E 00	9.7121E 00
510 520	4.3726E 00	5.8975E 00	6.3609E 00	1.2469E 01
520 530	4.9404E 00	6.8080E 00	6.8080E 00	1.3616E 01
530 540	5.0457E 00	6.9877E 00	6.5794E 00	1.3204E 01
540 550	4.6394E 00	6.4187E 00	5.7687E 00	1.1497E 01
550 560	4.0670E 00	5.6350E 00	4.8440E 00	9.5200E 00
560 570	3.4155E 00	4.6862E 00	3.8927E 00	7.4750E 00
570 580	2.6644E 00	3.6094E 00	2.9094E 00	5.4906E 00
580 590	2.1284E 00	2.8390E 00	2.1930E 00	4.0800E 00
590 600	1.7388E 00	2.2815E 00	1.6794E 00	3.0510E 00
600 610	1.3324E 00	1.7314E 00	1.2292E 00	2.1667E 00
610 620	9.8677E-01	1.2759E 00	8.7025E-01	1.5119E 00
620 630	7.3841E-01	9.5156E-01	6.1117E-01	1.0549E 00
630 640	5.6062E-01	7.1906E-01	4.3387E-01	7.3531E-01
640 650	4.2936E-01	5.4819E-01	3.1482E-01	5.2062E-01
650 660	3.2574E-01	4.1404E-01	2.2372E-01	3.6600E-01
660 670	2.4874E-01	3.1567E-01	1.6111E-01	2.6220E-01
670 680	1.9420E-01	2.4744E-01	1.1957E-01	1.9180E-01
680 690	1.5168E-01	1.9401E-01	8.7565E-02	1.4151E-01
690 700	1.1592E-01	1.4962E-01	6.3315E-02	1.0237E-01
700 710	0.	0.	0.	0.
710 720	0.	0.	0.	0.
720 730	0.	0.	0.	0.
730 740	0.	0.	0.	0.
SUM	4.5637E 01	6.1752E 01	5.8686E 01	1.1141E 02

TABLE 24A.

SPECTRAL EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS
[PHOTOELECTRONS/10 KV-ELECTRON]

LAMBDA	P-22R S-1	P-22R S-20	P-22R S-20R	P-22R S-25
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.	0.	0.
310 320	0.	0.	0.	0.
320 330	0.	0.	0.	0.
330 340	0.	0.	0.	0.
340 350	0.	0.	0.	0.
350 360	0.	0.	0.	0.
360 370	0.	0.	0.	0.
370 380	0.	0.	0.	0.
380 390	0.	0.	0.	0.
390 400	0.	0.	0.	0.
400 410	0.	0.	0.	0.
410 420	0.	0.	0.	0.
420 430	0.	0.	0.	0.
430 440	0.	0.	0.	0.
440 450	0.	0.	0.	0.
450 460	0.	0.	0.	0.
460 470	0.	0.	0.	0.
470 480	0.	0.	0.	0.
480 490	0.	0.	0.	0.
490 500	0.	0.	0.	0.
500 510	0.	0.	0.	0.
510 520	0.	0.	0.	0.
520 530	0.	0.	0.	0.
530 540	0.	0.	0.	0.
540 550	0.	0.	0.	0.
550 560	2.6690E-03	1.4110E-01	1.4960E-01	1.1764E-01
560 570	6.1132E-03	2.8600E-01	3.0387E-01	2.4238E-01
570 580	1.3644E-02	5.6050E-01	6.0475E-01	4.8970E-01
580 590	2.5376E-02	8.9637E-01	9.7212E-01	8.1810E-01
590 600	4.1800E-02	1.2730E 00	1.3680E 00	1.2008E 00
600 610	6.3450E-02	1.7145E 00	1.8630E 00	1.6578E 00
610 620	8.6250E-02	2.0700E 00	2.2770E 00	2.0424E 00
620 630	1.0732E-01	2.2680E 00	2.5110E 00	2.3085E 00
630 640	1.2740E-01	2.3660E 00	2.6618E 00	2.5025E 00
640 650	1.5000E-01	2.4000E 00	2.7250E 00	2.6750E 00
650 660	1.7040E-01	2.3430E 00	2.6625E 00	2.7690E 00
660 670	1.8257E-01	2.1636E 00	2.5887E 00	2.7522E 00
670 680	1.9347E-01	1.9456E 00	2.4797E 00	2.6705E 00
680 690	1.9969E-01	1.7200E 00	2.2365E 00	2.4761E 00
690 700	1.9691E-01	1.4464E 00	1.9285E 00	2.2330E 00
700 710	1.8941E-01	1.1609E 00	1.6450E 00	1.9740E 00
710 720	1.7430E-01	9.1140E-01	1.3440E 00	1.6800E 00
720 730	1.5910E-01	6.8450E-01	1.0545E 00	1.4060E 00
730 740	0.	0.	0.	0.
SUM	2.0899E 00	2.6351E 01	3.1376E 01	3.2016E 01

TABLE 24B.

SPECTRAL EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS
[PHOTOELECTRONS/10 KV-ELECTRON]

LAMBDA	P-22R S-25H1	P-22R VARO	P-22R S-4	P-22R S-11
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.	0.	0.
310 320	0.	0.	0.	0.
320 330	0.	0.	0.	0.
330 340	0.	0.	0.	0.
340 350	0.	0.	0.	0.
350 360	0.	0.	0.	0.
360 370	0.	0.	0.	0.
370 380	0.	0.	0.	0.
380 390	0.	0.	0.	0.
390 400	0.	0.	0.	0.
400 410	0.	0.	0.	0.
410 420	0.	0.	0.	0.
420 430	0.	0.	0.	0.
430 440	0.	0.	0.	0.
440 450	0.	0.	0.	0.
450 460	0.	0.	0.	0.
460 470	0.	0.	0.	0.
470 480	0.	0.	0.	0.
480 490	0.	0.	0.	0.
490 500	0.	0.	0.	0.
500 510	0.	0.	0.	0.
510 520	0.	0.	0.	0.
520 530	0.	0.	0.	0.
530 540	0.	0.	0.	0.
540 550	0.	0.	0.	0.
550 560	1.6320E-01	1.3685E-01	5.8650E-02	8.5000E-02
560 570	3.4141E-01	2.9136E-01	1.0546E-01	1.5194E-01
570 580	6.8219E-01	6.0844E-01	1.8069E-01	2.6550E-01
580 590	1.1110E 00	1.0542E 00	2.4997E-01	3.7244E-01
590 600	1.6150E 00	1.6055E 00	2.9260E-01	4.3700E-01
600 610	2.2194E 00	2.3085E 00	3.0510E-01	4.5360E-01
610 620	2.7082E 00	2.9842E 00	2.6910E-01	3.8640E-01
620 630	3.0294E 00	3.5437E 00	2.1060E-01	2.9160E-01
630 640	3.2806E 00	4.0268E 00	1.5925E-01	2.0020E-01
640 650	3.5300E 00	4.4750E 00	0.	1.2500E-01
650 660	3.6955E 00	4.8191E 00	0.	7.9875E-02
660 670	3.6951E 00	4.9867E 00	0.	5.4500E-02
670 680	3.5806E 00	5.0412E 00	0.	7.3030E-02
680 690	3.3814E 00	4.9789E 00	0.	8.2005E-02
690 700	3.1059E 00	4.8212E 00	0.	4.4660E-02
700 710	2.7260E 00	4.5590E 00	0.	2.3970E-02
710 720	2.2764E 00	4.1580E 00	0.	1.7640E-02
720 730	1.8426E 00	3.7000E 00	0.	0.
730 740	0.	0.	0.	0.
SUM	4.2984E 01	5.8099E 01	1.8314E 00	3.1444E 00

TABLE 24C.

SPECTRAL EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS
[PHOTOELECTRONS/10 KV-ELECTRON]

LAMBDA	P-22R S-17	P-22R VARIAN	P-22R S-20IF	P-22R GA AS
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.	0.	0.
310 320	0.	0.	0.	0.
320 330	0.	0.	0.	0.
330 340	0.	0.	0.	0.
340 350	0.	0.	0.	0.
350 360	0.	0.	0.	0.
360 370	0.	0.	0.	0.
370 380	0.	0.	0.	0.
380 390	0.	0.	0.	0.
390 400	0.	0.	0.	0.
400 410	0.	0.	0.	0.
410 420	0.	0.	0.	0.
420 430	0.	0.	0.	0.
430 440	0.	0.	0.	0.
440 450	0.	0.	0.	0.
450 460	0.	0.	0.	0.
460 470	0.	0.	0.	0.
470 480	0.	0.	0.	0.
480 490	0.	0.	0.	0.
490 500	0.	0.	0.	0.
500 510	0.	0.	0.	0.
510 520	0.	0.	0.	0.
520 530	0.	0.	0.	0.
530 540	0.	0.	0.	0.
540 550	0.	0.	0.	0.
550 560	2.0400E-01	7.9050E-02	1.8700E-02	3.2300E-01
560 570	3.3605E-01	1.6087E-01	6.4350E-02	6.7567E-01
570 580	5.0150E-01	3.1712E-01	1.8806E-01	1.3791E 00
580 590	6.0600E-01	5.2394E-01	3.9769E-01	2.3356E 00
590 600	6.0800E-01	7.6000E-01	7.1250E-01	3.4770E 00
600 610	6.1020E-01	1.0395E 00	1.1880E 00	4.8870E 00
610 620	5.7270E-01	1.2765E 00	1.7422E 00	6.1410E 00
620 630	5.1435E-01	1.4377E 00	2.2882E 00	7.0875E 00
630 640	4.6865E-01	1.5697E 00	2.8438E 00	7.8715E 00
640 650	4.1000E-01	1.6500E 00	3.4500E 00	8.5500E 00
650 660	3.0885E-01	1.6774E 00	3.9671E 00	8.9460E 00
660 670	2.0165E-01	1.6622E 00	4.3327E 00	8.8835E 00
670 680	1.4715E-01	1.6077E 00	4.5780E 00	8.5565E 00
680 690	0.	1.5442E 00	4.7392E 00	8.1472E 00
690 700	0.	1.3956E 00	4.7197E 00	7.5617E 00
700 710	0.	1.1985E 00	4.4650E 00	6.8150E 00
710 720	0.	1.0290E 00	3.9900E 00	5.8800E 00
720 730	0.	8.6950E-01	3.4410E 00	4.9580E 00
730 740	0.	0.	0.	0.
SUM	5.4891E 00	1.9799E 01	4.7126E 01	1.0248E 02

TABLE 24D.

SPECTRAL EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS
[PHOTOELECTRONS/10 KV-ELECTRON]

LAMBDA	P-22R S-25H2	P-22R VARO	P-22R S-25T1	P-22R S-25T
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.	0.	0.
310 320	0.	0.	0.	0.
320 330	0.	0.	0.	0.
330 340	0.	0.	0.	0.
340 350	0.	0.	0.	0.
350 360	0.	0.	0.	0.
360 370	0.	0.	0.	0.
370 380	0.	0.	0.	0.
380 390	0.	0.	0.	0.
390 400	0.	0.	0.	0.
400 410	0.	0.	0.	0.
410 420	0.	0.	0.	0.
420 430	0.	0.	0.	0.
430 440	0.	0.	0.	0.
440 450	0.	0.	0.	0.
450 460	0.	0.	0.	0.
460 470	0.	0.	0.	0.
470 480	0.	0.	0.	0.
480 490	0.	0.	0.	0.
490 500	0.	0.	0.	0.
500 510	0.	0.	0.	0.
510 520	0.	0.	0.	0.
520 530	0.	0.	0.	0.
530 540	0.	0.	0.	0.
540 550	0.	0.	0.	0.
550 560	9.8770E-02	1.3685E-01	1.1764E-01	2.3120E-01
560 570	2.1235E-01	2.9136E-01	2.4203E-01	4.6475E-01
570 580	4.4914E-01	6.0844E-01	4.9044E-01	9.2556E-01
580 590	7.9032E-01	1.0542E 00	8.1431E-01	1.5150E 00
590 600	1.2236E 00	1.6055E 00	1.1818E 00	2.1470E 00
600 610	1.7766E 00	2.3085E 00	1.6389E 00	2.8890E 00
610 620	2.3080E 00	2.9842E 00	2.0355E 00	3.5362E 00
620 630	2.7499E 00	3.5437E 00	2.2761E 00	3.9285E 00
630 640	3.1395E 00	4.0268E 00	2.4297E 00	4.1178E 00
640 650	3.5050E 00	4.4750E 00	2.5700E 00	4.2500E 00
650 660	3.7914E 00	4.8191E 00	2.6039E 00	4.2600E 00
660 670	3.9274E 00	4.9867E 00	2.5451E 00	4.1420E 00
670 680	3.9567E 00	5.0412E 00	2.4361E 00	3.9076E 00
680 690	3.8926E 00	4.9789E 00	2.2471E 00	3.6316E 00
690 700	3.7352E 00	4.8212E 00	2.0401E 00	3.2987E 00
700 710	3.4827E 00	4.5590E 00	1.8283E 00	2.9375E 00
710 720	3.1206E 00	4.1580E 00	1.5834E 00	2.5494E 00
720 730	2.7417E 00	3.7000E 00	1.3394E 00	2.1608E 00
730 740	0.	0.	0.	0.
SUM	4.4904E 01	5.8099E 01	3.0420E 01	5.0893E 01

TABLE 25A.

SPECTRAL EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS
[PHOTOELECTRONS/10 KV-ELECTRON]

LAMBDA	P-31 S-1	P-31 S-20	P-31 S-20R	P-31 S-25
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.	0.	0.
310 320	0.	0.	0.	0.
320 330	0.	0.	0.	0.
330 340	0.	0.	0.	0.
340 350	0.	0.	0.	0.
350 360	0.	0.	0.	0.
360 370	0.	0.	0.	0.
370 380	0.	0.	0.	0.
380 390	7.2850E-03	1.8755E-01	1.8755E-01	1.1935E-01
390 400	9.6050E-03	3.5171E-01	3.5171E-01	2.2600E-01
400 410	1.3397E-02	7.4851E-01	7.4851E-01	4.8930E-01
410 420	1.7456E-02	1.5556E 00	1.5556E 00	1.0272E 00
420 430	2.3270E-02	2.9535E 00	2.9535E 00	1.9578E 00
430 440	3.2737E-02	4.7287E 00	4.7287E 00	3.1828E 00
440 450	4.1544E-02	6.2071E 00	6.2071E 00	4.2277E 00
450 460	4.5857E-02	6.8786E 00	6.8786E 00	4.6962E 00
460 470	4.5235E-02	6.5127E 00	6.5127E 00	4.5507E 00
470 480	4.5262E-02	6.0971E 00	6.0971E 00	4.3931E 00
480 490	5.4979E-02	6.8040E 00	6.8040E 00	4.9207E 00
490 500	7.5106E-02	8.2731E 00	8.2731E 00	6.0237E 00
500 510	1.0202E-01	1.0010E 01	1.0299E 01	7.4112E 00
510 520	1.2682E-01	1.1069E 01	1.1792E 01	8.3994E 00
520 530	1.3837E-01	1.0744E 01	1.1475E 01	8.3812E 00
530 540	1.3965E-01	9.6075E 00	1.0290E 01	7.6650E 00
540 550	1.2240E-01	7.3950E 00	7.9050E 00	6.0350E 00
550 560	9.4200E-02	4.9800E 00	5.2800E 00	4.1520E 00
560 570	7.2675E-02	3.4000E 00	3.6125E 00	2.8815E 00
570 580	5.5500E-02	2.2800E 00	2.4600E 00	1.9920E 00
580 590	4.2210E-02	1.4910E 00	1.6170E 00	1.3608E 00
590 600	3.1350E-02	9.5475E-01	1.0260E 00	9.0060E-01
600 610	2.2325E-02	6.0325E-01	6.5550E-01	5.8330E-01
610 620	1.6250E-02	3.9000E-01	4.2900E-01	3.8480E-01
620 630	1.2190E-02	2.5760E-01	2.8520E-01	2.6220E-01
630 640	8.9600E-03	1.6640E-01	1.8720E-01	1.7600E-01
640 650	6.9000E-03	1.1060E-01	1.2535E-01	1.2305E-01
650 660	5.2800E-03	7.2600E-02	8.2500E-02	8.5800E-02
660 670	4.0200E-03	4.7640E-02	5.7000E-02	6.0600E-02
670 680	0.	0.	0.	0.
680 690	0.	0.	0.	0.
690 700	0.	0.	0.	0.
700 710	0.	0.	0.	0.
710 720	0.	0.	0.	0.
720 730	0.	0.	0.	0.
730 740	0.	0.	0.	0.
SUM	1.4129E 00	1.1488E 02	1.1888E 02	8.6669E 01

TABLE 25B.

SPECTRAL EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS [PHOTOELECTRONS/10 KV-ELECTRON]

LAMBDA	P-31 S-25H1	P-31 VARO	P-31 S-4	P-31 S-11
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.	0.	0.
310 320	0.	0.	0.	0.
320 330	0.	0.	0.	0.
330 340	0.	0.	0.	0.
340 350	0.	0.	0.	0.
350 360	0.	0.	0.	0.
360 370	0.	0.	0.	0.
370 380	0.	0.	0.	0.
380 390	0.	0.	1.2663E-01	1.3485E-01
390 400	0.	0.	2.3363E-01	2.5425E-01
400 410	0.	5.8250E-02	4.8347E-01	5.4172E-01
410 420	0.	1.6387E-01	9.8206E-01	1.1281E 00
420 430	0.	4.0275E-01	1.8392E 00	2.1704E 00
430 440	3.6739E 00	8.3662E-01	2.9646E 00	3.5647E 00
440 450	4.6187E 00	1.4174E 00	3.9100E 00	4.7897E 00
450 460	4.8896E 00	1.9890E 00	4.3095E 00	5.3592E 00
460 470	4.6052E 00	2.3980E 00	4.1147E 00	5.1775E 00
470 480	4.3665E 00	2.6625E 00	3.8606E 00	4.9522E 00
480 490	4.9025E 00	3.3412E 00	4.1917E 00	5.4675E 00
490 500	6.1152E 00	4.6512E 00	4.9181E 00	6.5575E 00
500 510	7.8925E 00	6.3525E 00	5.7269E 00	7.7962E 00
510 520	9.7344E 00	7.7875E 00	6.1744E 00	8.3437E 00
520 530	1.0462E 01	8.3150E 00	5.7375E 00	7.8750E 00
530 540	1.0027E 01	8.0850E 00	4.7775E 00	6.8250E 00
540 550	8.1600E 00	6.7150E 00	3.4000E 00	4.9300E 00
550 560	5.7600E 00	4.8300E 00	2.0700E 00	3.0000E 00
560 570	4.0587E 00	3.4637E 00	1.2537E 00	1.8062E 00
570 580	2.7750E 00	2.4750E 00	7.3500E-01	1.0800E 00
580 590	1.8480E 00	1.7535E 00	4.1580E-01	6.1950E-01
590 600	1.2112E 00	1.2041E 00	2.1945E-01	3.2775E-01
600 610	7.8090E-01	8.1225E-01	1.0735E-01	1.5960E-01
610 620	5.1025E-01	5.6225E-01	5.0700E-02	7.2800E-02
620 630	3.4408E-01	4.0250E-01	2.3920E-02	3.3120E-02
630 640	2.3072E-01	2.8320E-01	1.1200E-02	1.4080E-02
640 650	1.6238E-01	2.0585E-01	0.	5.7500E-03
650 660	1.1451E-01	1.4932E-01	0.	2.4750E-03
660 670	8.1360E-02	1.0980E-01	0.	1.2000E-03
670 680	0.	0.	0.	0.
680 690	0.	0.	0.	0.
690 700	0.	0.	0.	0.
700 710	0.	0.	0.	0.
710 720	0.	0.	0.	0.
720 730	0.	0.	0.	0.
730 740	0.	0.	0.	0.
SUM	9.7326E 01	7.1437E 01	6.2638E 01	8.2990E 01

TABLE 25C.

SPECTRAL EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS
[PHOTOELECTRONS/10 KV-ELECTRON]

LAMBDA	P-31 S-17	P-31 VARIAN	P-31 S-20IF	P-31 GA AS
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.	0.	0.
310 320	0.	0.	0.	0.
320 330	0.	0.	0.	0.
330 340	0.	0.	0.	0.
340 350	0.	0.	0.	0.
350 360	0.	0.	0.	0.
360 370	0.	0.	0.	0.
370 380	0.	0.	0.	0.
380 390	2.2165E-01	0.	9.9200E-02	2.8830E-01
390 400	4.0962E-01	0.	2.0340E-01	5.3392E-01
400 410	8.5627E-01	3.1164E-01	4.8347E-01	1.1126E 00
410 420	1.7694E 00	7.0062E-01	1.1875E 00	2.2919E 00
420 430	3.4010E 00	1.3984E 00	2.7074E 00	4.3407E 00
430 440	5.6381E 00	2.3462E 00	5.3835E 00	7.0567E 00
440 450	7.7222E 00	3.1524E 00	8.7975E 00	9.4817E 00
450 460	8.8952E 00	3.4807E 00	1.1160E 01	1.0718E 01
460 470	8.8835E 00	3.3517E 00	1.1390E 01	1.0573E 01
470 480	8.7862E 00	3.2216E 00	1.0863E 01	1.0330E 01
480 490	1.0084E 01	3.5842E 00	1.0753E 01	1.1785E 01
490 500	1.2657E 01	4.3462E 00	9.2262E 00	1.4792E 01
500 510	1.5977E 01	5.2937E 00	5.5825E 00	1.8672E 01
510 520	1.8356E 01	5.9519E 00	2.4475E 00	2.1582E 01
520 530	1.8000E 01	5.8500E 00	1.2206E 00	2.1712E 01
530 540	1.5960E 01	5.2500E 00	7.7700E-01	2.0160E 01
540 550	1.1815E 01	4.0800E 00	6.4175E-01	1.6235E 01
550 560	7.2000E 00	2.7900E 00	6.6000E-01	1.1400E 01
560 570	3.9950E 00	1.9125E 00	7.6500E-01	8.0325E 00
570 580	2.0400E 00	1.2900E 00	7.6500E-01	5.6100E 00
580 590	1.0080E 00	8.7150E-01	6.6150E-01	3.8850E 00
590 600	4.5600E-01	5.7000E-01	5.3437E-01	2.6077E 00
600 610	2.1470E-01	3.6575E-01	4.1800E-01	1.7195E 00
610 620	1.0790E-01	2.4050E-01	3.2825E-01	1.1570E 00
620 630	5.8420E-02	1.6330E-01	2.5990E-01	8.0500E-01
630 640	3.2960E-02	1.1040E-01	2.0000E-01	5.5360E-01
640 650	1.8860E-02	7.5900E-02	1.5670E-01	3.9330E-01
650 660	9.5700E-03	5.1975E-02	1.2292E-01	2.7720E-01
660 670	4.4400E-03	3.6600E-02	9.5400E-02	1.9560E-01
670 680	0.	0.	0.	0.
680 690	0.	0.	0.	0.
690 700	0.	0.	0.	0.
700 710	0.	0.	0.	0.
710 720	0.	0.	0.	0.
720 730	0.	0.	0.	0.
730 740	0.	0.	0.	0.
SUM	1.6458E 02	6.0798E 01	8.7893E 01	2.1830E 02

TABLE 25D.

SPECTRAL EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS
[PHOTOELECTRONS/10 KV-ELECTRON]

LAMBDA	P-31 S-25H2	P-31 VARO	P-31 S-25T1	P-31 S-25T2
250 260	0.	0.	0.	0.
260 270	0.	0.	0.	0.
270 280	0.	0.	0.	0.
280 290	0.	0.	0.	0.
290 300	0.	0.	0.	0.
300 310	0.	0.	0.	0.
310 320	0.	0.	0.	0.
320 330	0.	0.	0.	0.
330 340	0.	0.	0.	0.
340 350	0.	0.	0.	0.
350 360	0.	0.	0.	0.
360 370	0.	0.	0.	0.
370 380	0.	0.	0.	0.
380 390	0.	0.	0.	0.
390 400	0.	0.	0.	0.
400 410	0.	5.8250E-02	0.	0.
410 420	0.	1.6387E-01	0.	0.
420 430	0.	4.0275E-01	1.6334E 00	2.0921E 00
430 440	6.7294E-01	8.3662E-01	2.7463E 00	3.6193E 00
440 450	1.0997E 00	1.4174E 00	3.8122E 00	5.2052E 00
450 460	1.5359E 00	1.9890E 00	4.4290E 00	6.3537E 00
460 470	1.8312E 00	2.3980E 00	4.4145E 00	6.7307E 00
470 480	2.0341E 00	2.6625E 00	4.2973E 00	6.9757E 00
480 490	2.5636E 00	3.3412E 00	4.8418E 00	8.3531E 00
490 500	3.5227E 00	4.6512E 00	5.9627E 00	1.0827E 01
500 510	4.7740E 00	6.3525E 00	7.3824E 00	1.4004E 01
510 520	5.7739E 00	7.7875E 00	8.3994E 00	1.6465E 01
520 530	6.0412E 00	8.3250E 00	8.3250E 00	1.6650E 01
530 540	5.8380E 00	8.0850E 00	7.6125E 00	1.5277E 01
540 550	4.8535E 00	6.7150E 00	6.0350E 00	1.2027E 01
550 560	3.4860E 00	4.8300E 00	4.1520E 00	8.1600E 00
560 570	2.5245E 00	3.4637E 00	2.8772E 00	5.5250E 00
570 580	1.8270E 00	2.4750E 00	1.9950E 00	3.7650E 00
580 590	1.3146E 00	1.7535E 00	1.3545E 00	2.5200E 00
590 600	9.1770E-01	1.2041E 00	8.8635E-01	1.6102E 00
600 610	6.2510E-01	8.1225E-01	5.7665E-01	1.0165E 00
610 620	4.3485E-01	5.6225E-01	3.8350E-01	6.6625E-01
620 630	3.1234E-01	4.0250E-01	2.5852E-01	4.4620E-01
630 640	2.2080E-01	2.8320E-01	1.7088E-01	2.8960E-01
640 650	1.6123E-01	2.0585E-01	1.1822E-01	1.9550E-01
650 660	1.1748E-01	1.4932E-01	8.0685E-02	1.3200E-01
660 670	8.6520E-02	1.0980E-01	5.6040E-02	9.1200E-02
670 680	0.	0.	0.	0.
680 690	0.	0.	0.	0.
690 700	0.	0.	0.	0.
700 710	0.	0.	0.	0.
710 720	0.	0.	0.	0.
720 730	0.	0.	0.	0.
730 740	0.	0.	0.	0.
SUM	5.2569E 01	7.1437E 01	6.2792E 01	1.4900E 02

TABLE 26.

EFFICIENCY OF PHOSPHOR-FILM COMBINATIONS
[GRAINS/ELECTRON]

	ROYAL X		TRI X	
	D=0.3	D=1.0	D=0.3	D=1.0
P-4	3.2795E 00	1.0181E 00	8.4145E-01	3.7779E-01
P-11	4.8959E 00	1.2935E 00	1.2163E 00	5.3467E-01
P-16	1.5256E 00	3.4052E-01	4.2291E-01	1.5124E-01
P-20	2.4157E 00	9.4985E-01	6.2956E-01	3.0030E-01
P-22B	3.8893E 00	9.4278E [illegible]	9.8159E-01	4.1839E-01
P-22G	2.8880E 00	1.0789E 00	7.1213E-01	3.3875E-01
P-22R	6.6671E-01	2.5767E-01	4.3581E-01	2.2402E-01
P-31	4.4135E 00	1.4275E 00	1.0763E 00	4.9514E-01

TABLE 27A.

EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS
[PHOTOELECTRONS/10 KV-ELECTRON]

	S-1	S-20	S-20R	S-25
P-4	1.1742E 00	7.3645E 01	7.6108E 01	5.6361E 01
P-11	1.1376E 00	1.2269E 02	1.2390E 02	8.6817E 01
P-16	9.9338E-01	2.9825E 01	2.9825E 01	1.9605E 01
P-20	1.2912E 00	5.3500E 01	5.7452E 01	4.6215E 01
P-22B	7.9500E-01	9.0603E 01	9.0786E 01	6.2320E 01
P-22G	1.2364E 00	7.3526E 01	7.7661E 01	5.9158E 01
P-22R	2.0899E 00	2.6351E 01	3.1376E 01	3.2016E 01
P-31	1.4129E 00	1.1488E 02	1.1888E 02	8.6669E 01

TABLE 27B.

EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS
[PHOTOELECTRONS/10 KV-ELECTRON]

	S-25H1	VARO	S-4	S-11
P-4	5.9002E 01	4.5122E 01	3.7747E 01	4.8537E 01
P-11	8.2325E 01	4.8271E 01	7.4581E 01	9.4207E 01
P-16	1.5264E 00	1.3425E 00	2.0010E 01	2.1743E 01
P-20	6.0843E 01	5.5907E 01	2.0194E 01	2.8727E 01
P-22B	5.3302E 01	2.5613E 01	5.6702E 01	6.9733E 01
P-22G	7.3663E 01	6.1752E 01	3.4799E 01	4.8149E 01
P-22R	4.2984E 01	5.8099E 01	1.8314E 00	3.1444E 00
P-31	9.7326E 01	7.1437E 01	6.2638E 01	8.2990E 01

TABLE 27C.

EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS
[PHOTOELECTRONS/10 KV-ELECTRON]

	S-17	VARIAN	S-20IF	GA AS
P-4	8.8559E 01	3.8333E 01	6.5611E 01	1.4324E 02
P-11	1.6797E 02	6.1704E 01	1.4742E 02	2.0543E 02
P-16	3.6050E 01	5.0764E 00	1.9721E 01	4.5983E 01
P-20	6.1314E 01	3.0648E 01	2.2926E 01	1.2866E 02
P-22B	1.1728E 02	4.4084E 01	1.1896E 02	1.4317E 02
P-22G	1.0260E 02	4.0528E 01	3.4441E 01	1.5715E 02
P-22R	5.4891E 00	1.9799E 01	4.7126E 01	1.0248E 02
P-31	1.6458E 02	6.0798E 01	8.7893E 01	2.1830E 02

TABLE 27D.

EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS
[PHOTOELECTRONS/10 KV-ELECTRON]

	S-25H2	VARO	S-25T1	S-25T2
P-4	3.3046E 01	4.5122E 01	4.9947E 01	8.5098E 01
P-11	3.5339E 01	4.8271E 01	7.7061E 01	1.2457E 02
P-16	3.3070E-01	1.3425E 00	2.3389E 00	3.0800E 00
P-20	4.1677E 01	5.5907E 01	4.5831E 01	8.6486E 01
P-22B	1.8267E 01	2.5613E 01	5.1467E 01	7.6514E 01
P-22G	4.5687E 01	6.1752E 01	5.8686E 01	1.1141E 02
P-22R	4.4904E 01	5.8099E 01	3.0420E 01	5.0893E 01
P-31	5.2559E 01	7.1437E 01	8.2792E 01	1.4900E 02

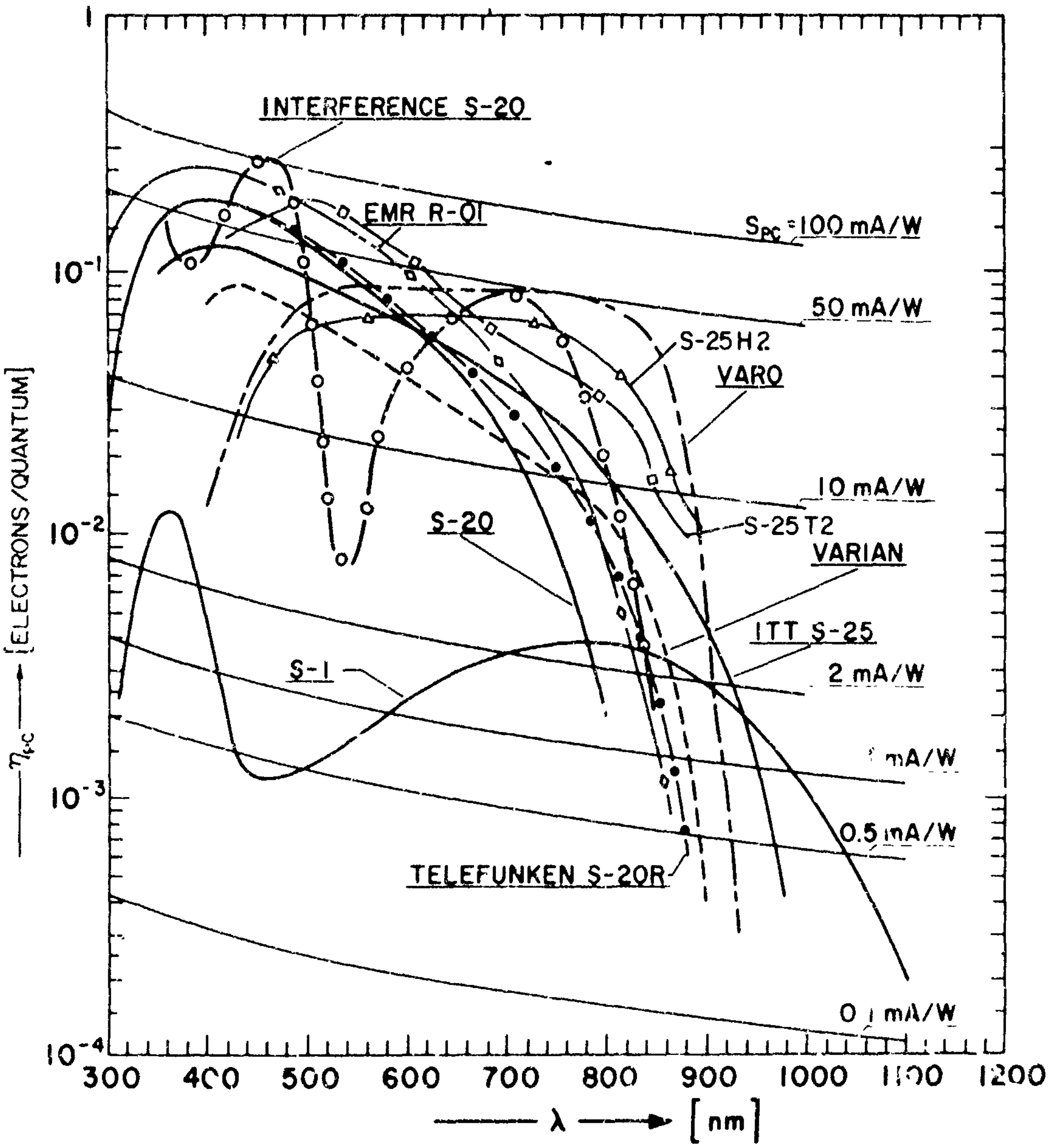


FIG 1 SPECTRAL CONVERSION FACTORS, η_{pc}, OF REPRESENTATIVE PHOTOCATHODES SUITABLE FOR DETECTION OF NIGHT-SKY RADIATION.

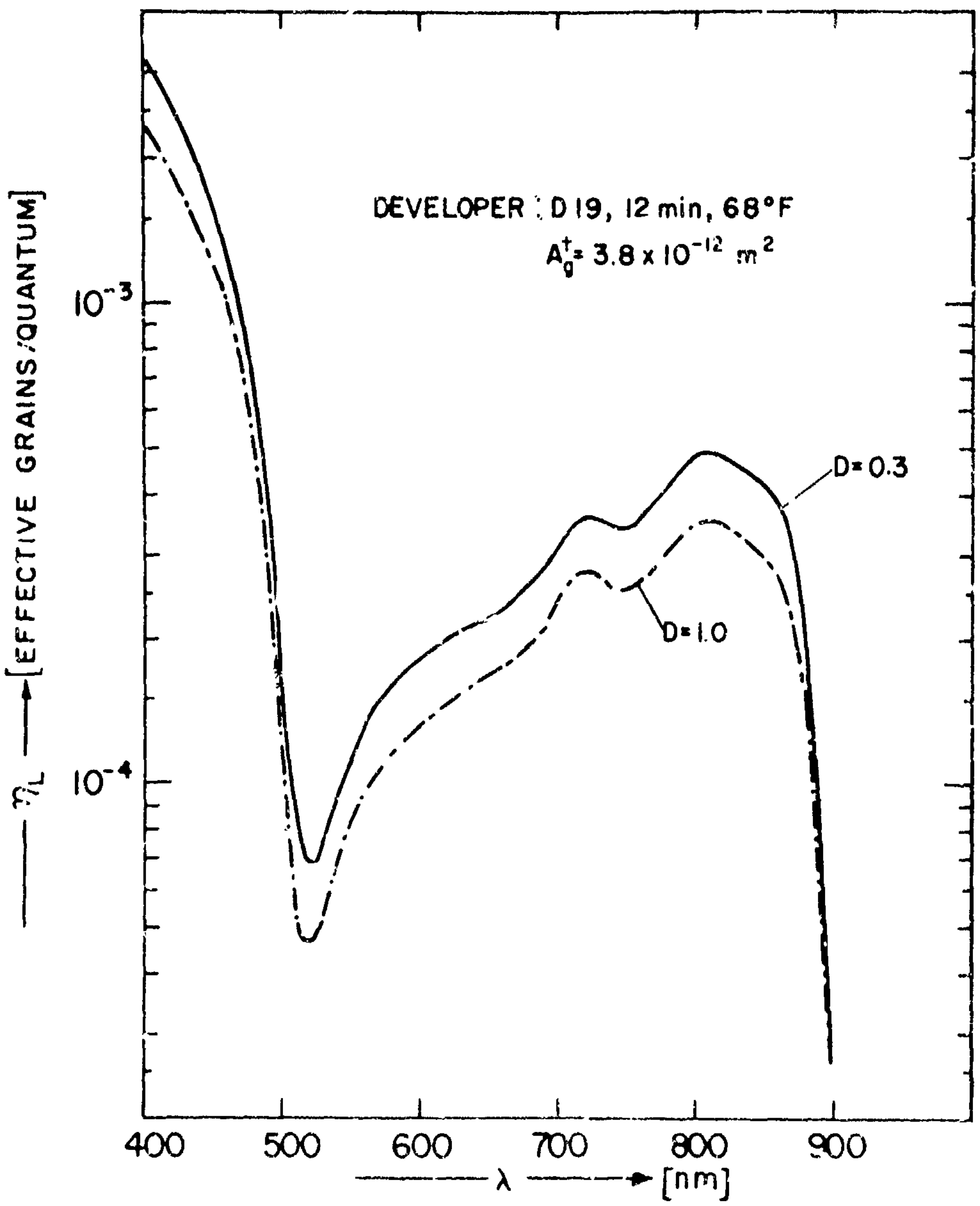


FIG 2. SPECTRAL CONVERSION FACTORS, η_L, OF KODAK NEAR IR FILM 5424: DENSITY, D, AS PARAMETER

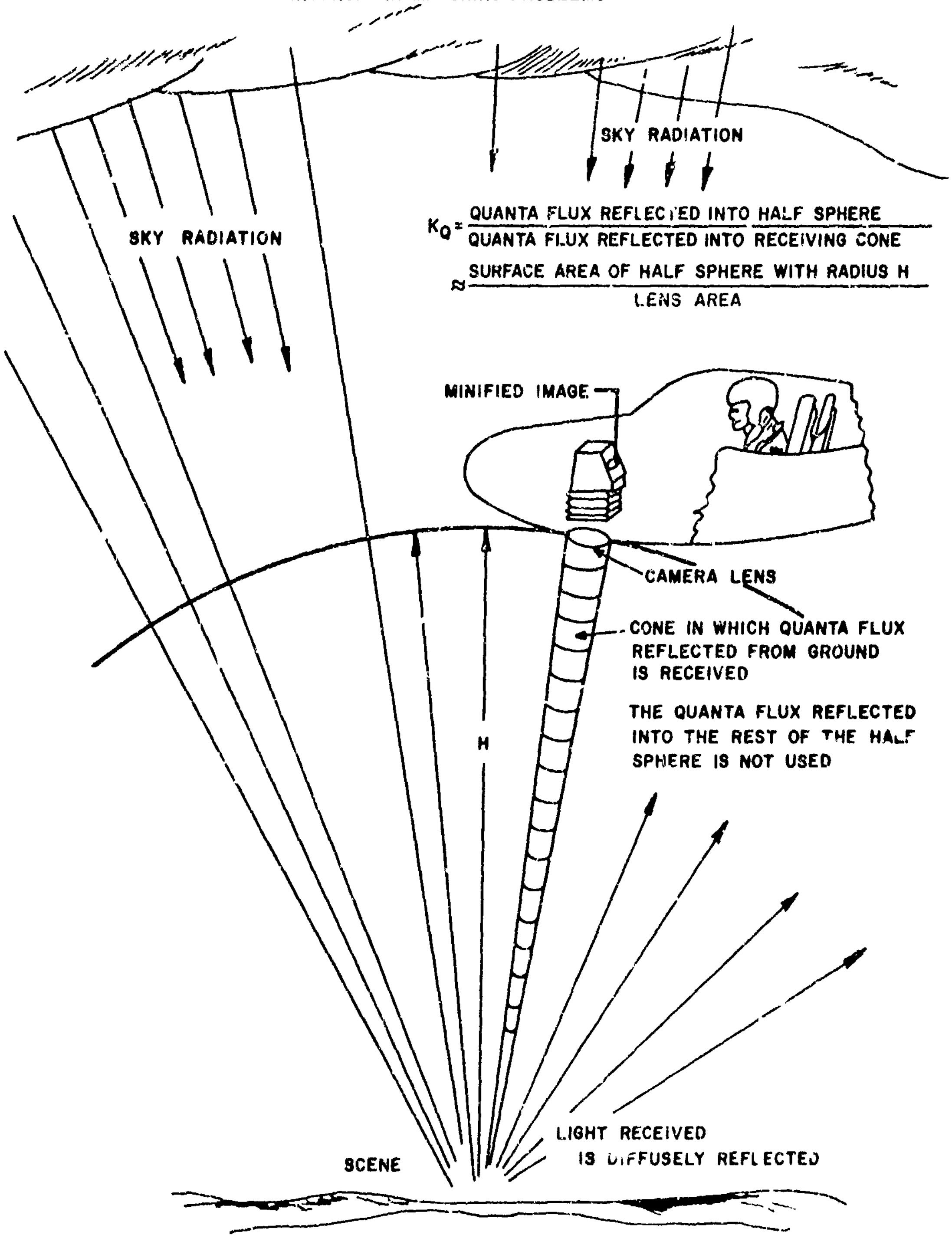


FIG 3 UTILIZATION OF NIGHT-SKY ILLUMINATION

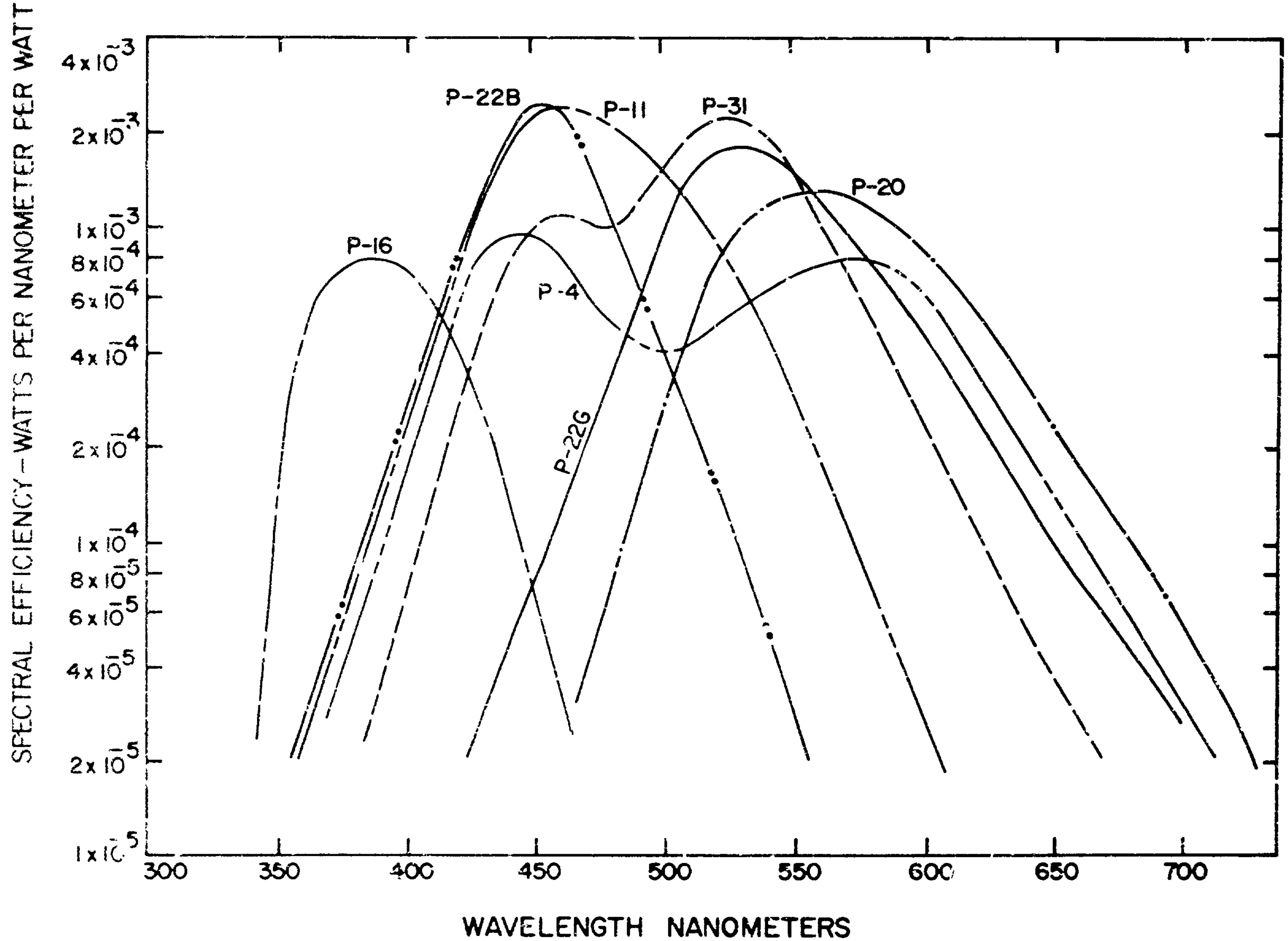


FIG. 4. SPECTRAL EFFICIENCIES OF PHOSPHOR SCREENS.

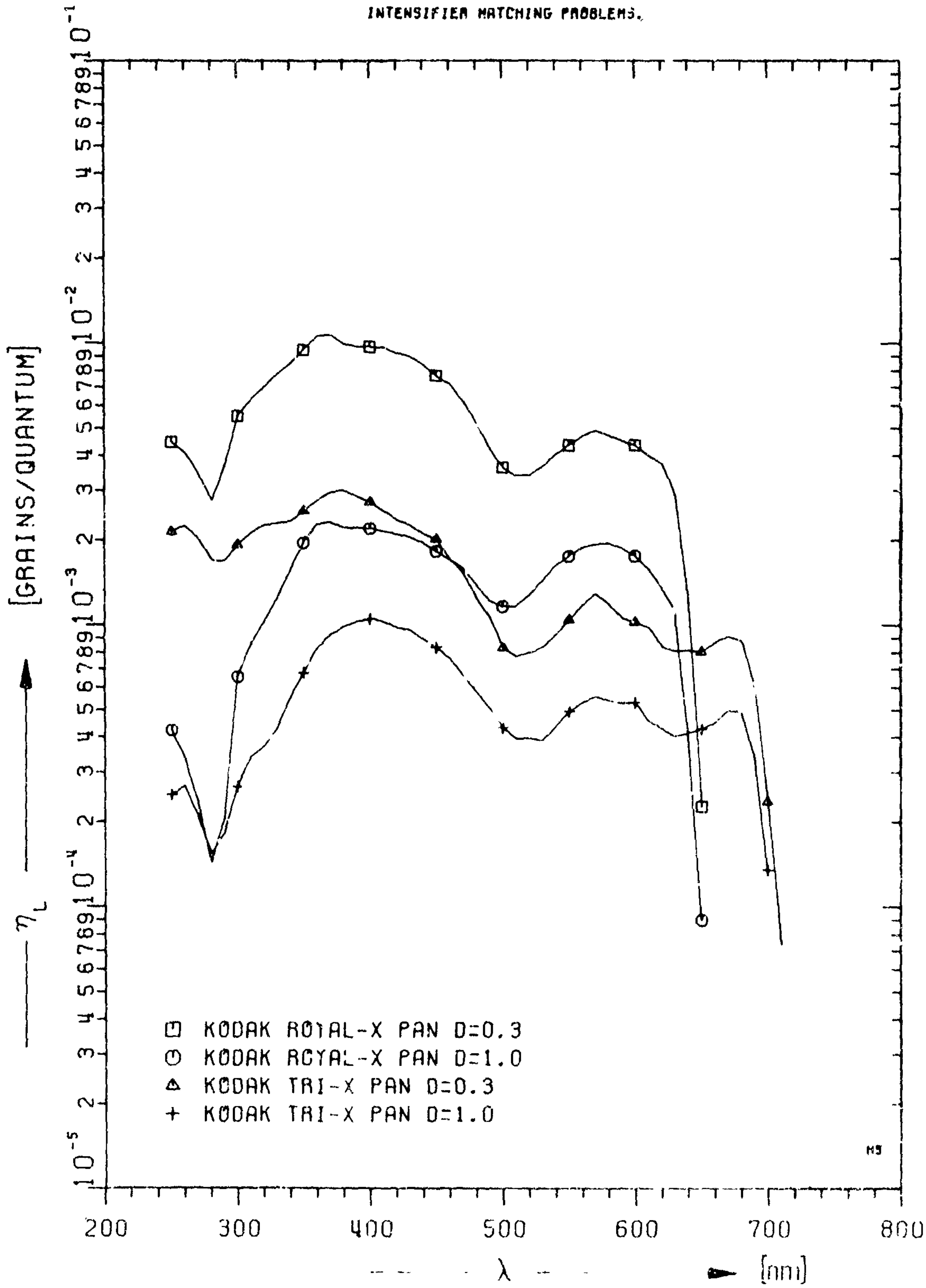


FIG 5. SPECTRAL EFFICIENCIES, η_L, OF PHOTOGRAPHIC FILMS

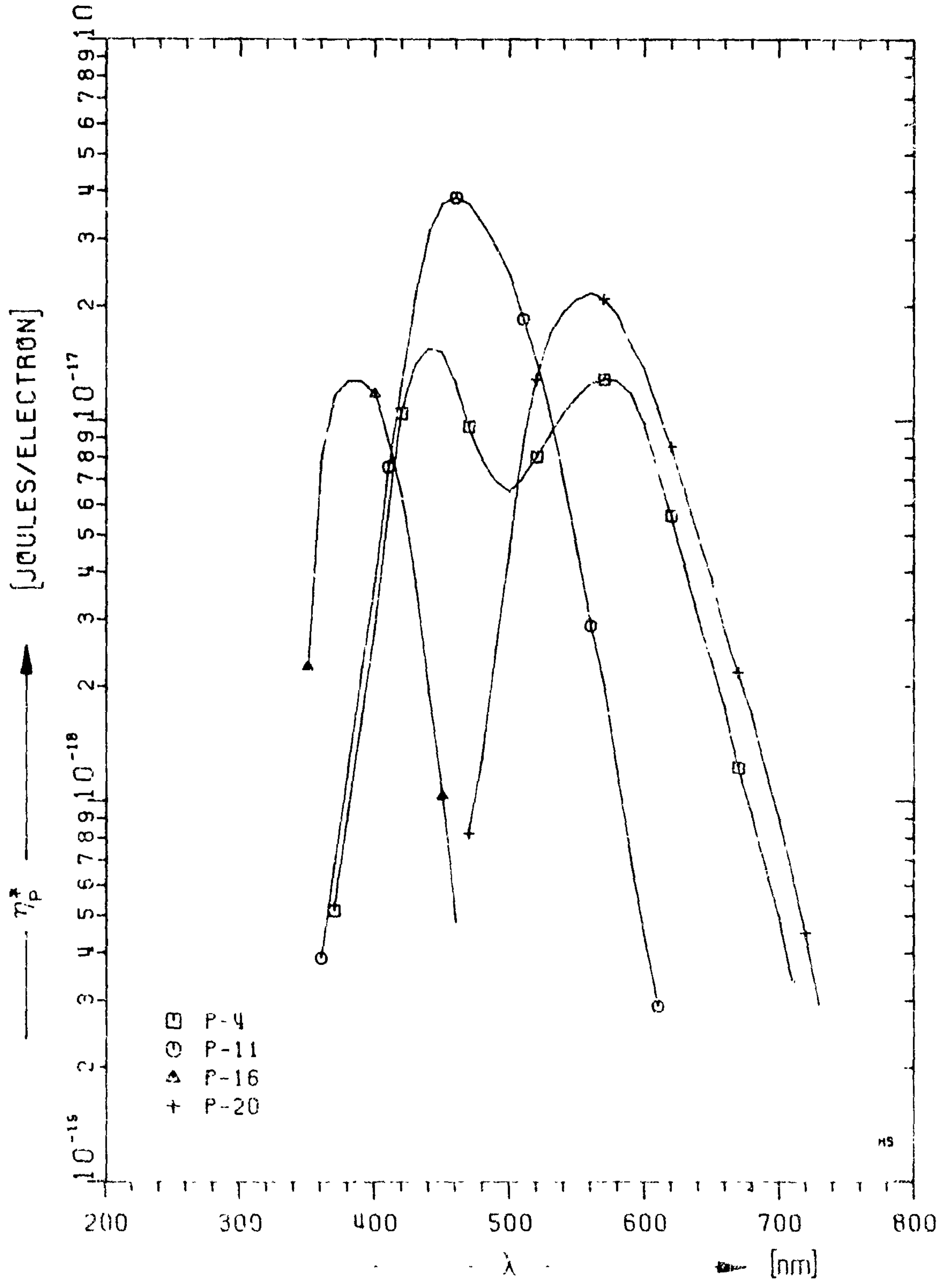


FIG 6A. SPECTRAL EFFICIENCIES, η_p^*, OF PHOSPHOR SCREENS

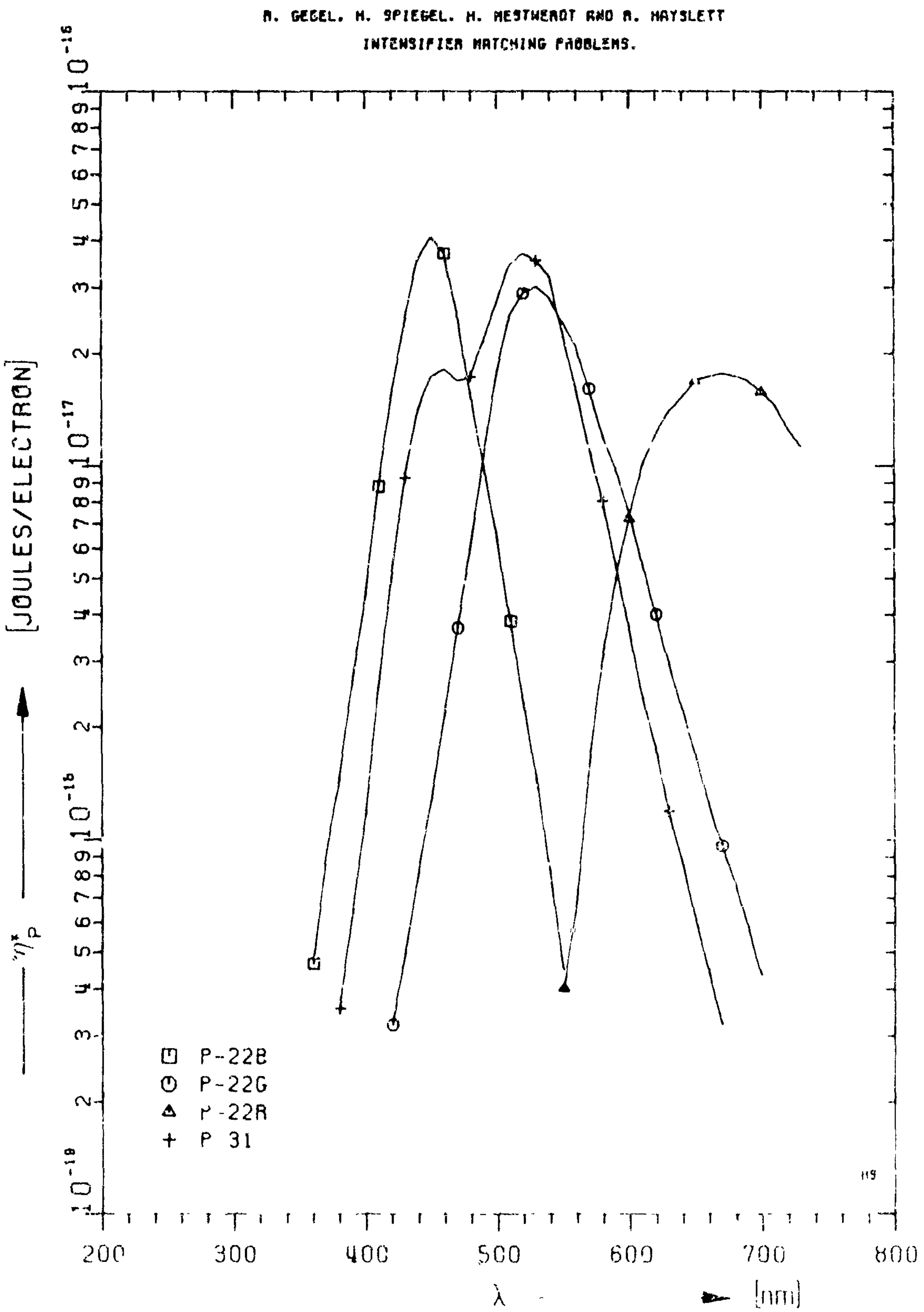


FIG 6B SPECTRAL EFFICIENCIES, η_p^*, OF PHOSPHOR SCREENS

R. GEBEL, H. SPIEGEL, H. WESTHEADT AND R. HAYSLETT
INTENSIFIER MATCHING PROBLEMS.

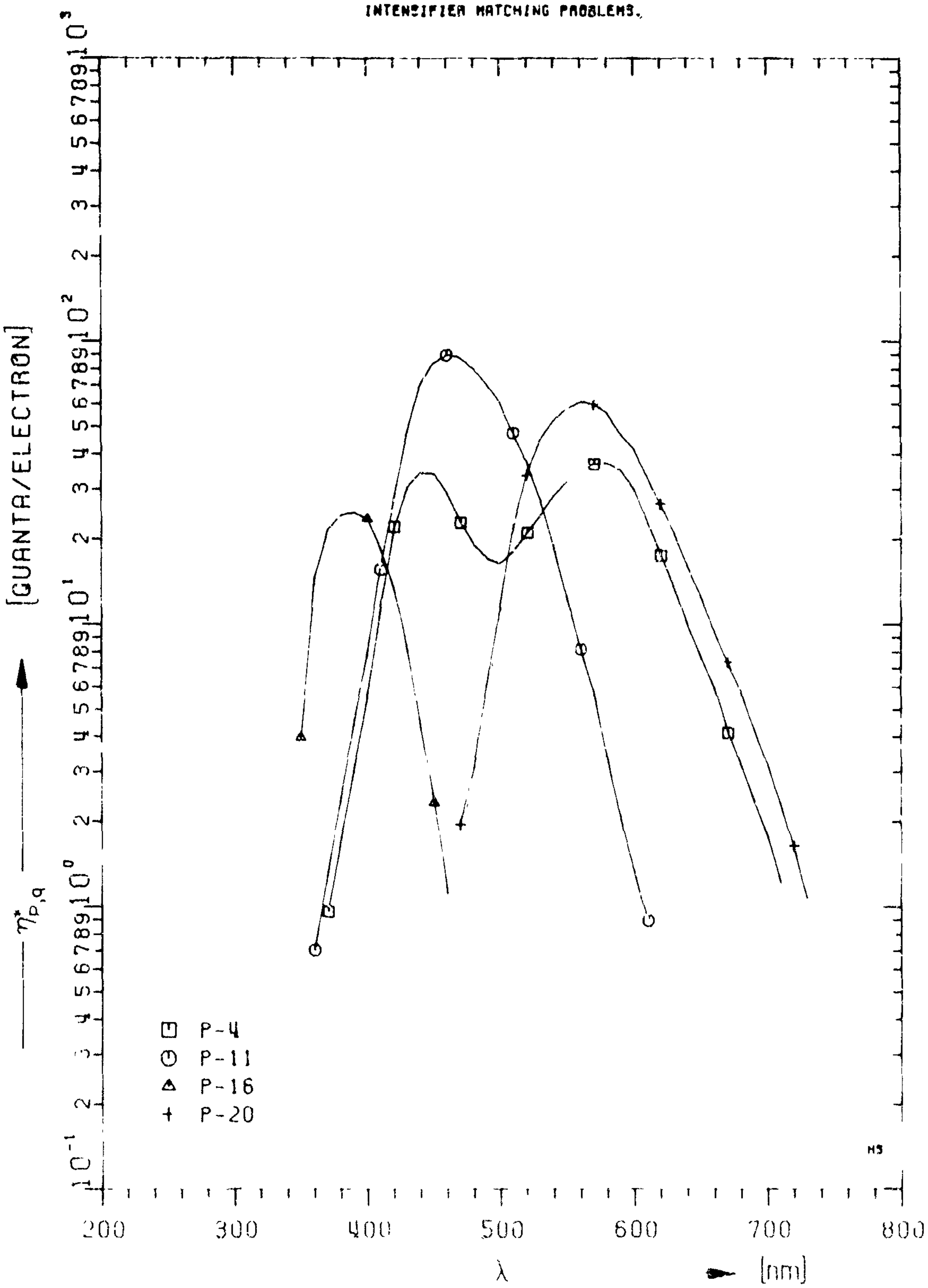


FIG. 7A SPECTRAL EFFICIENCIES, $\eta^*_{p,q}$, OF PHOSPHOR SCREENS

R. GEBEL, H. SPIEGEL, H. WESTWERDT AND R. MAYSLETT
INTENSIFIER MATCHING PROBLEMS.

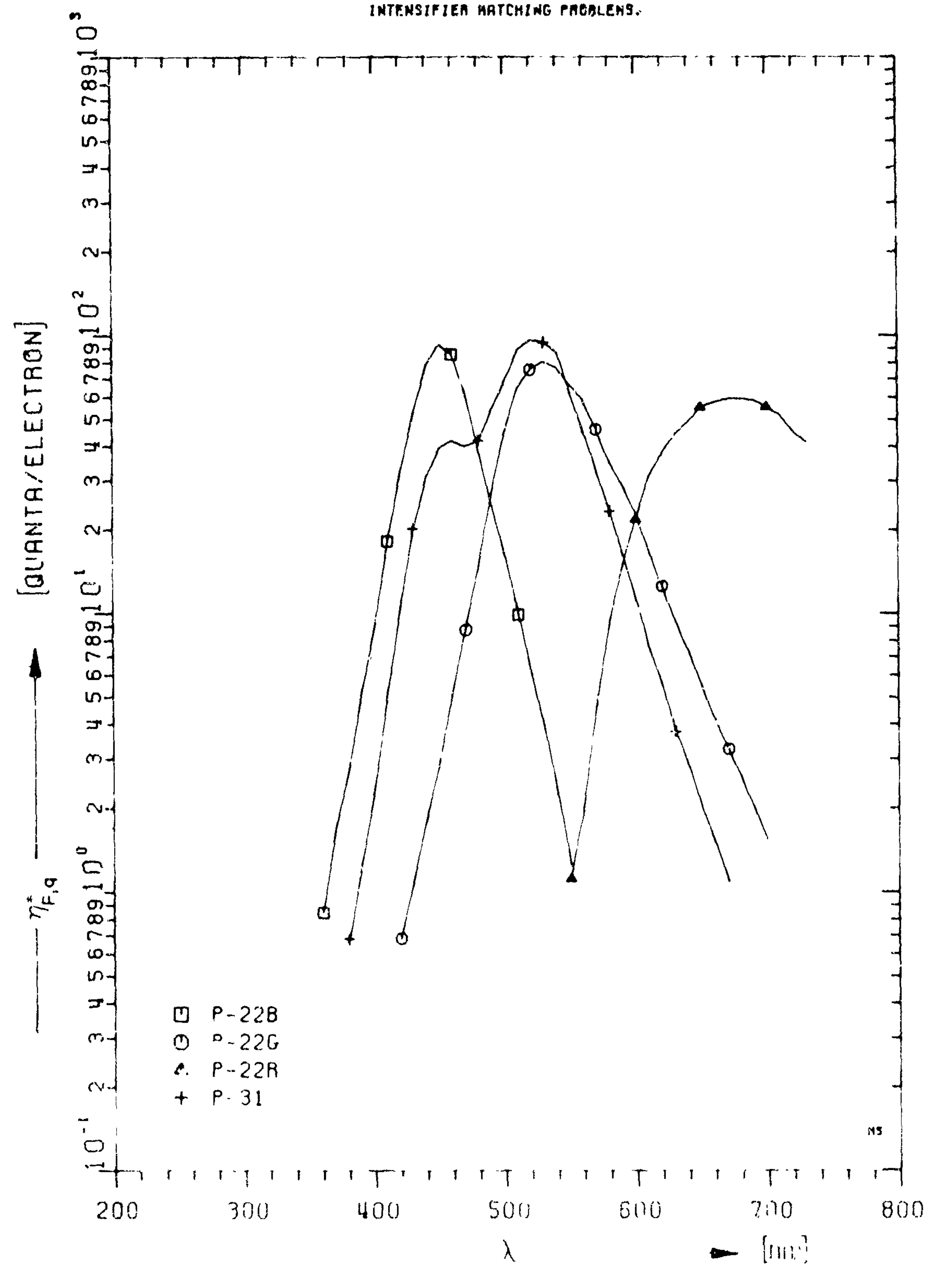


FIG 7B SPECTRAL EFFICIENCIES η^*_{Fq} OF PHOSPHOR SCREENS

A. GEBEL. H. SPIEGEL. H. WESTHEADT AND A. HAYSLETT
INTENSIFIER MATCHING PROBLEMS.

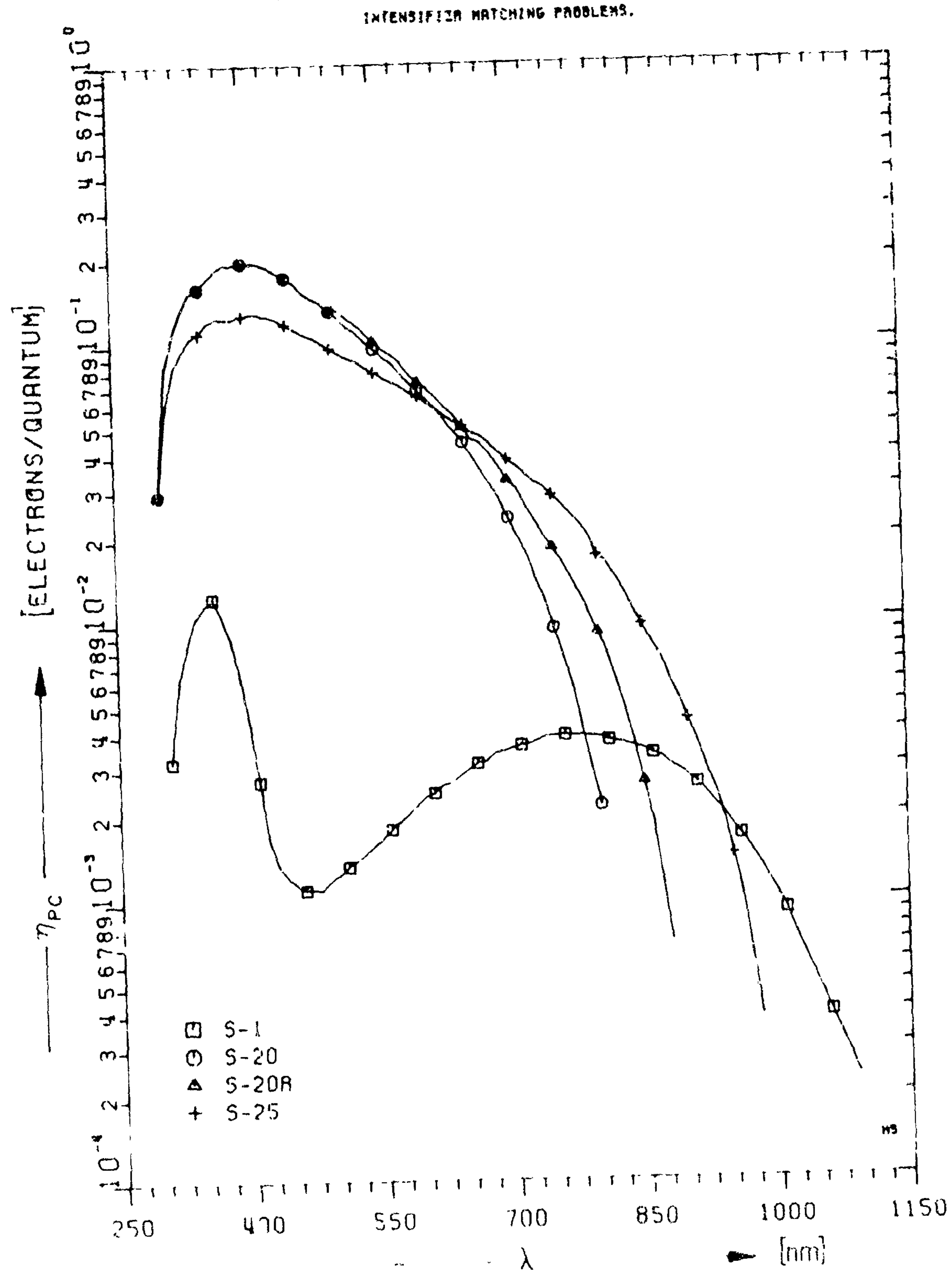


FIG. 8A SPECTRAL EFFICIENCIES, η_{PC}, OF PHOTOCATHODES

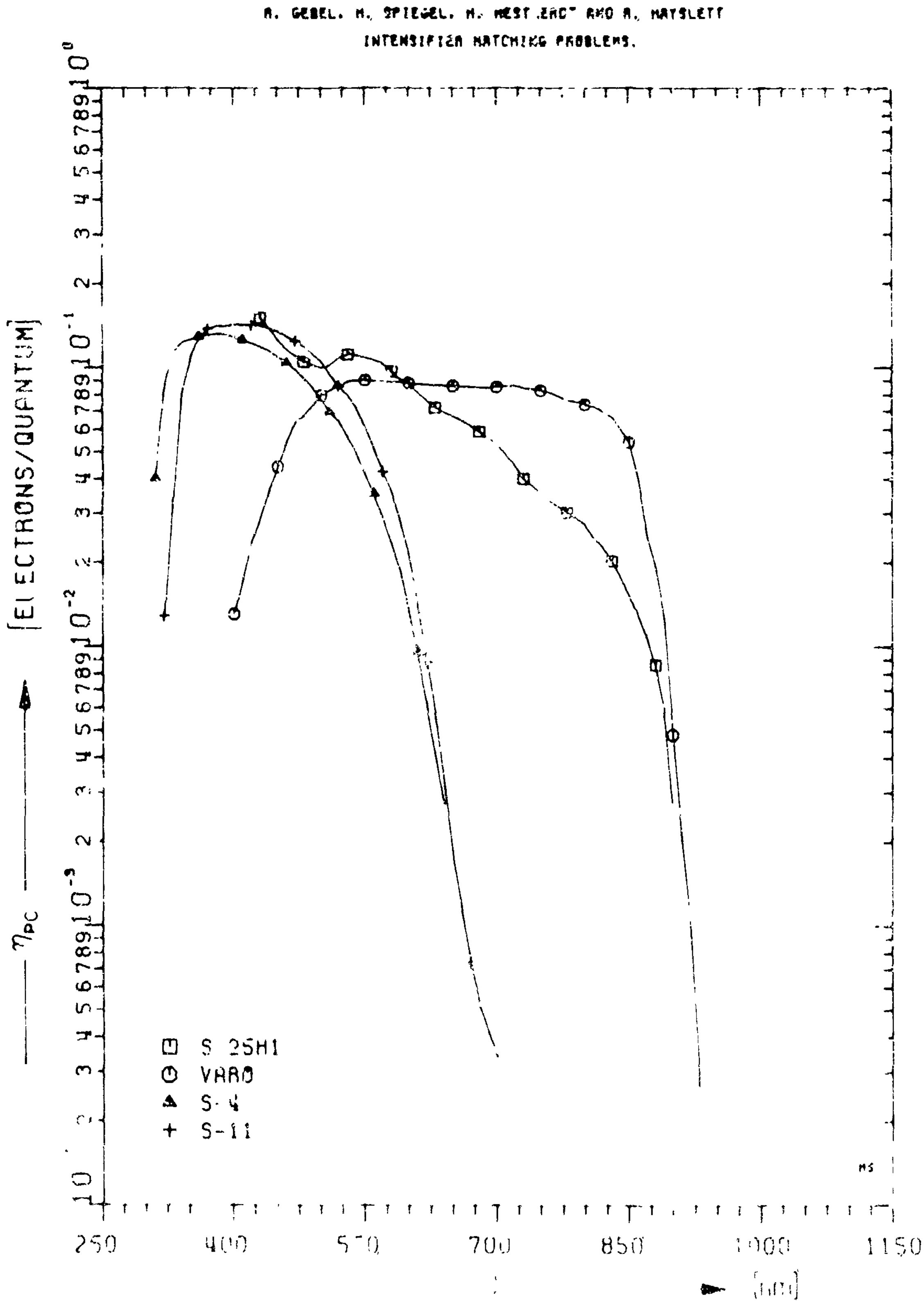


FIG. 8B SPECTRAL EFFICIENCIES (η) OF PHOTOCATHODES

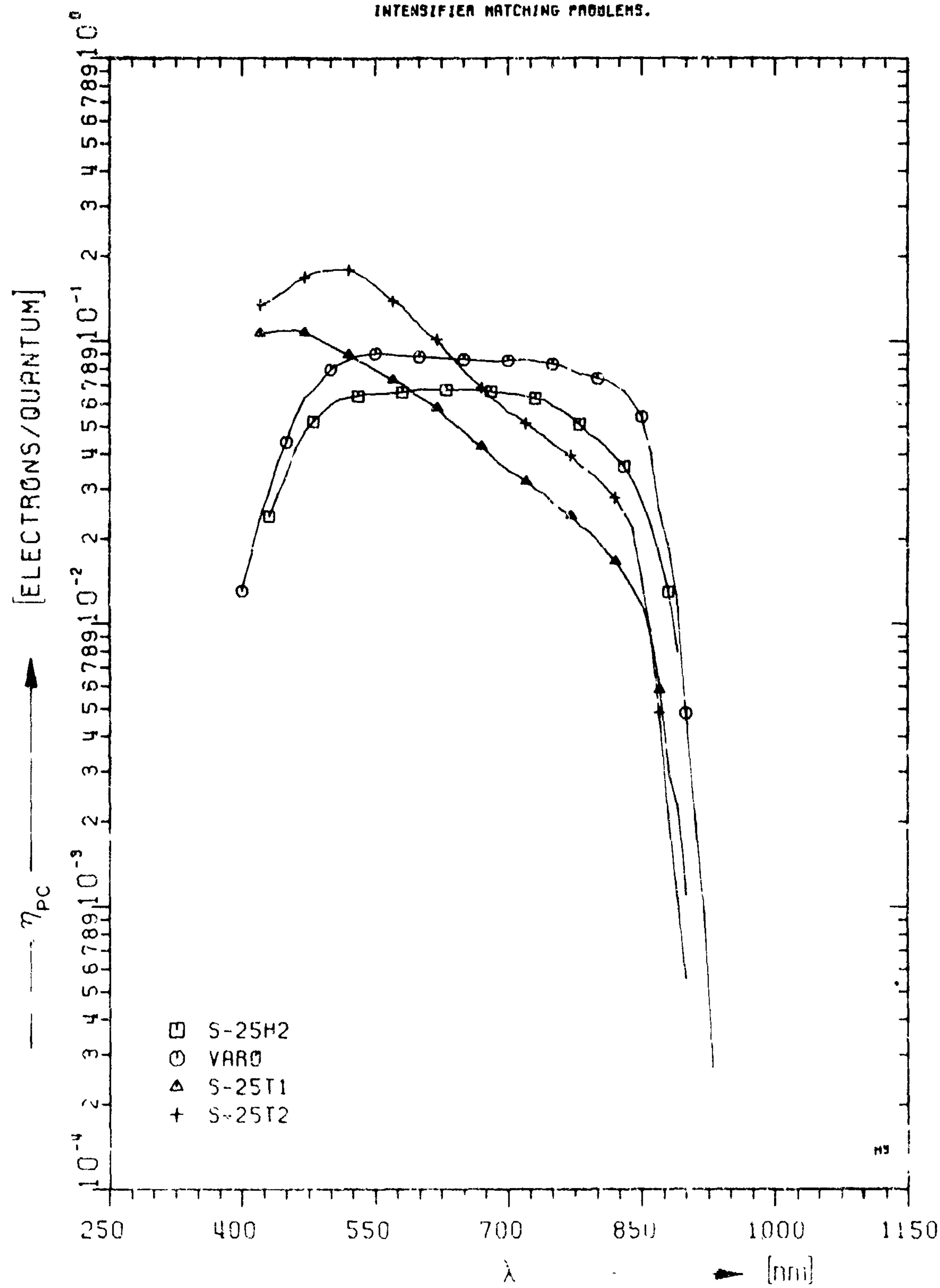


FIG. 8 . SPECTRAL EFFICIENCIES, η_{PC}, OF PHOTOCATHODES

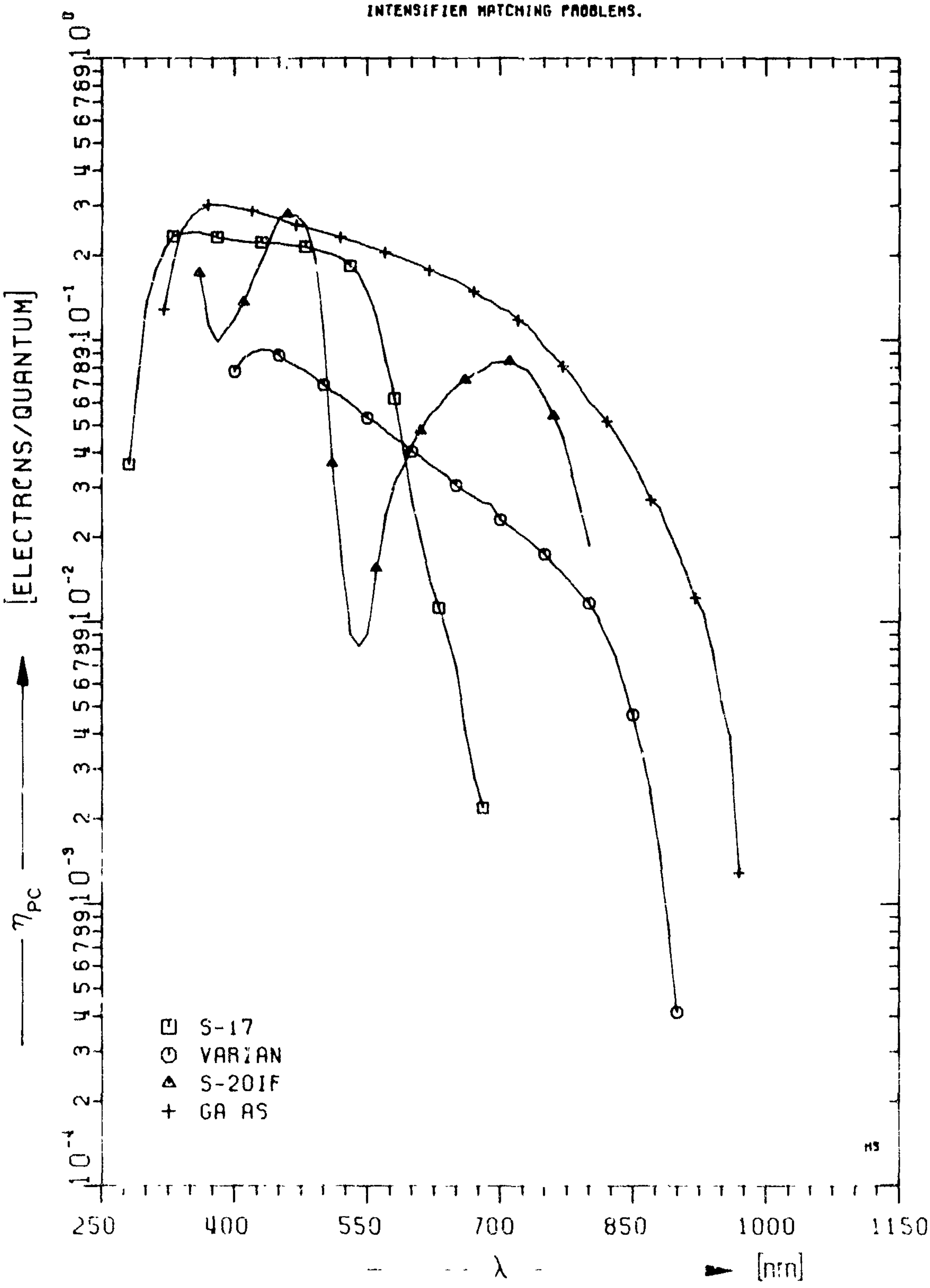


FIG 8 D SPECTRAL EFFICIENCIES, η_{PC}, OF PHOTOCATHODES

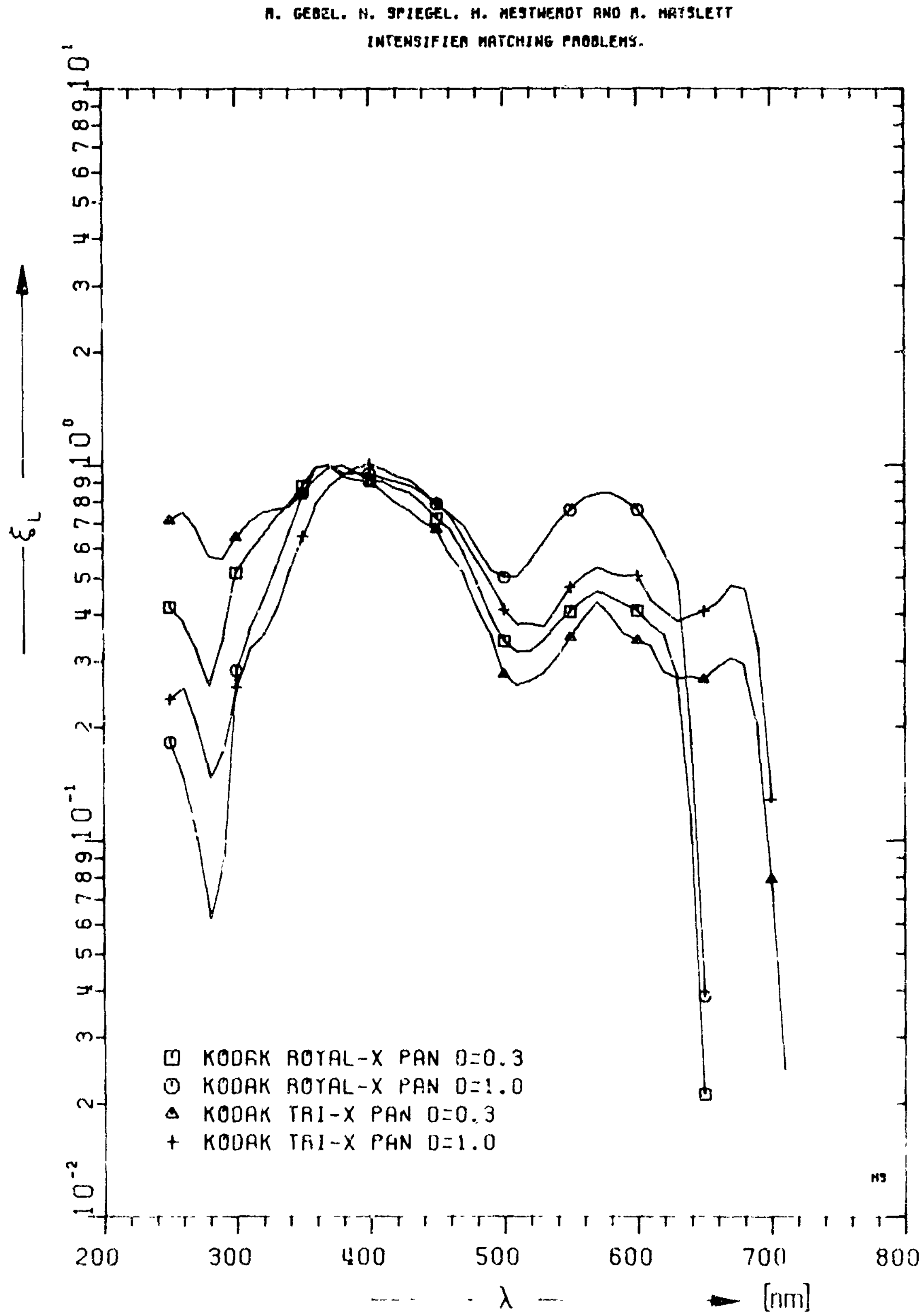


FIG. 9 NORMALIZED SPECTRAL EFFICIENCIES, ξ_L, OF PHOTOGRAPHIC EMULSION

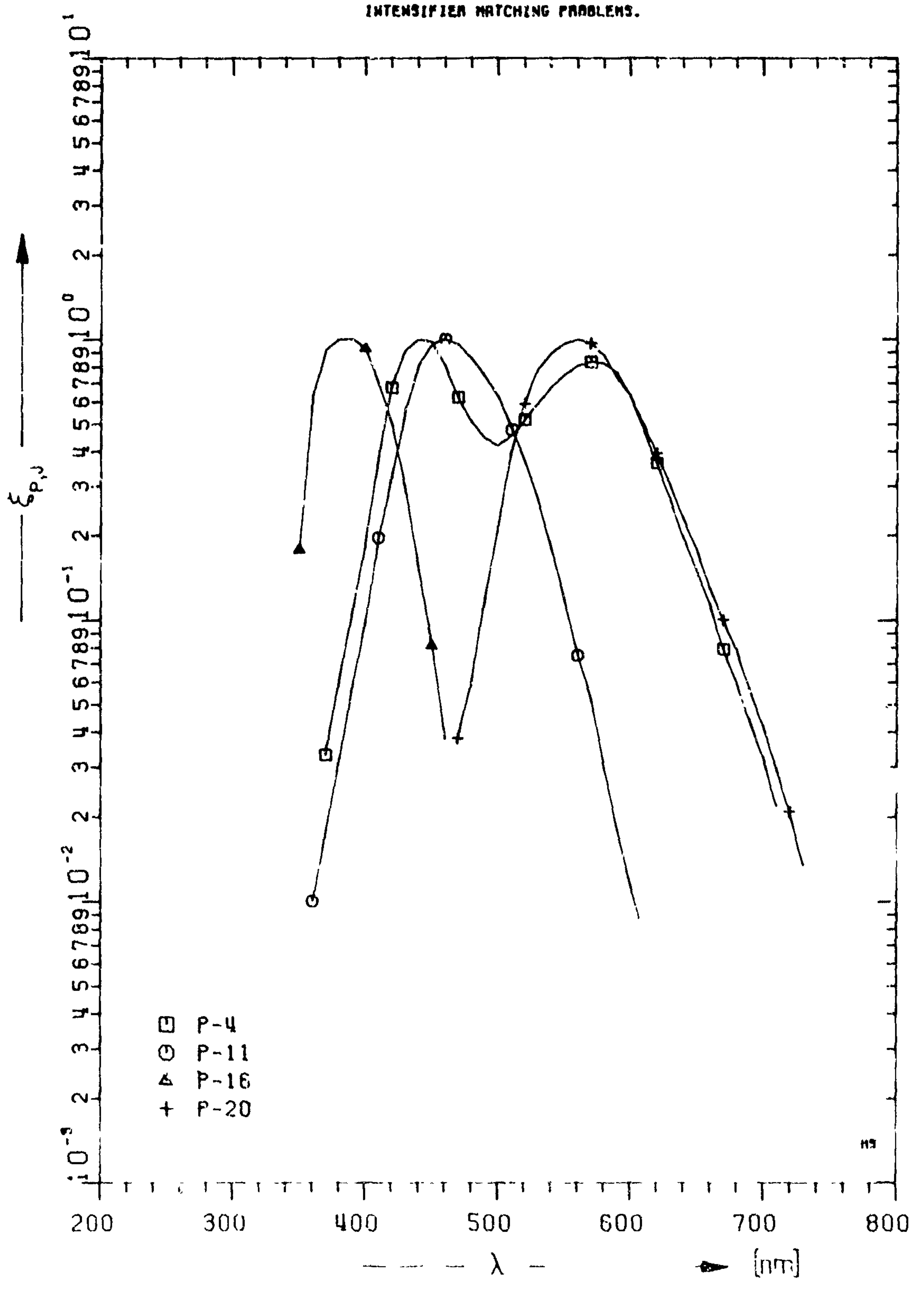


FIG.10A. NORMALIZED SPECTRAL EFFICIENCIES, $\xi_{p,j}$, OF PHOSPHOR SCREENS

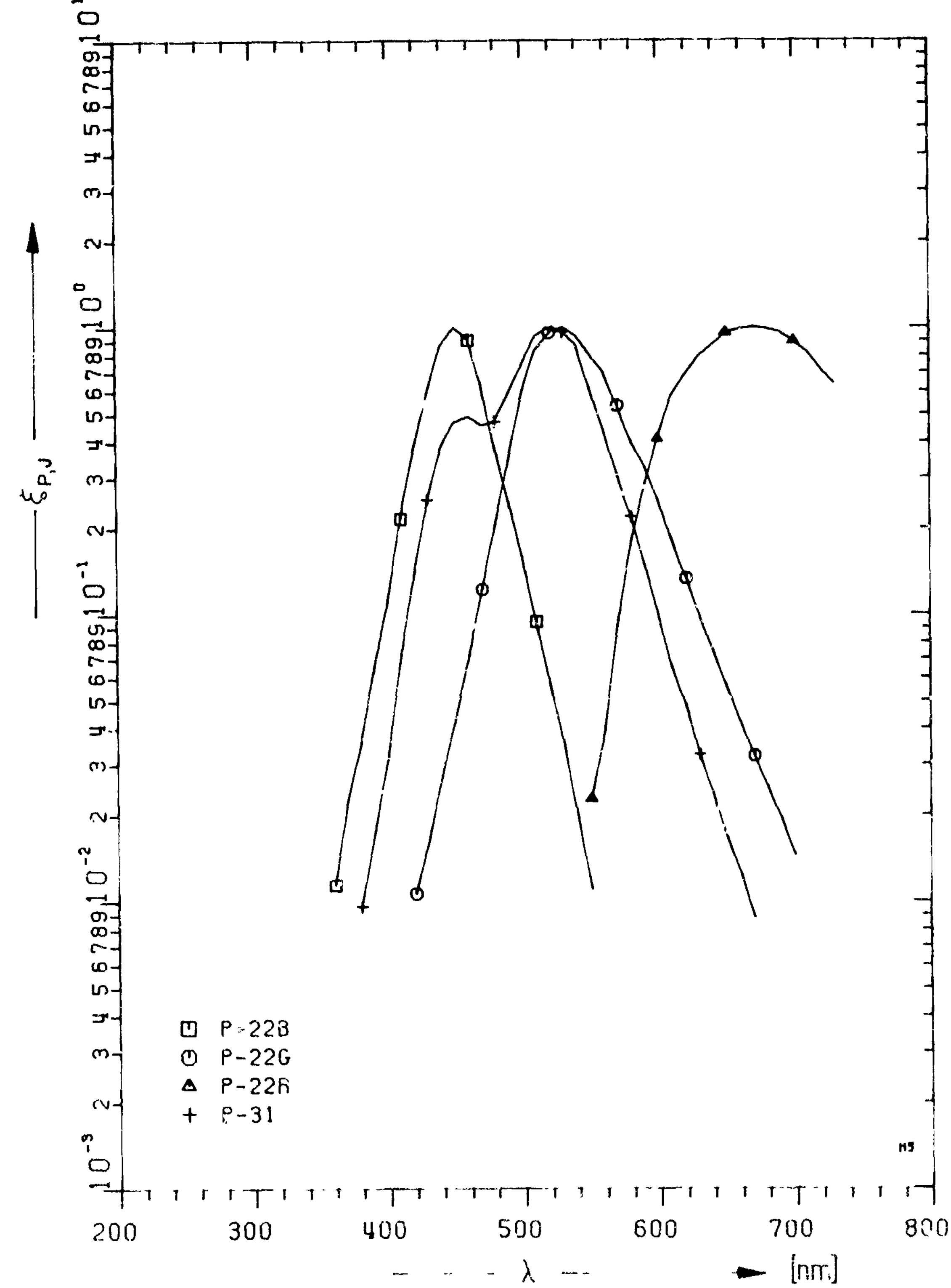
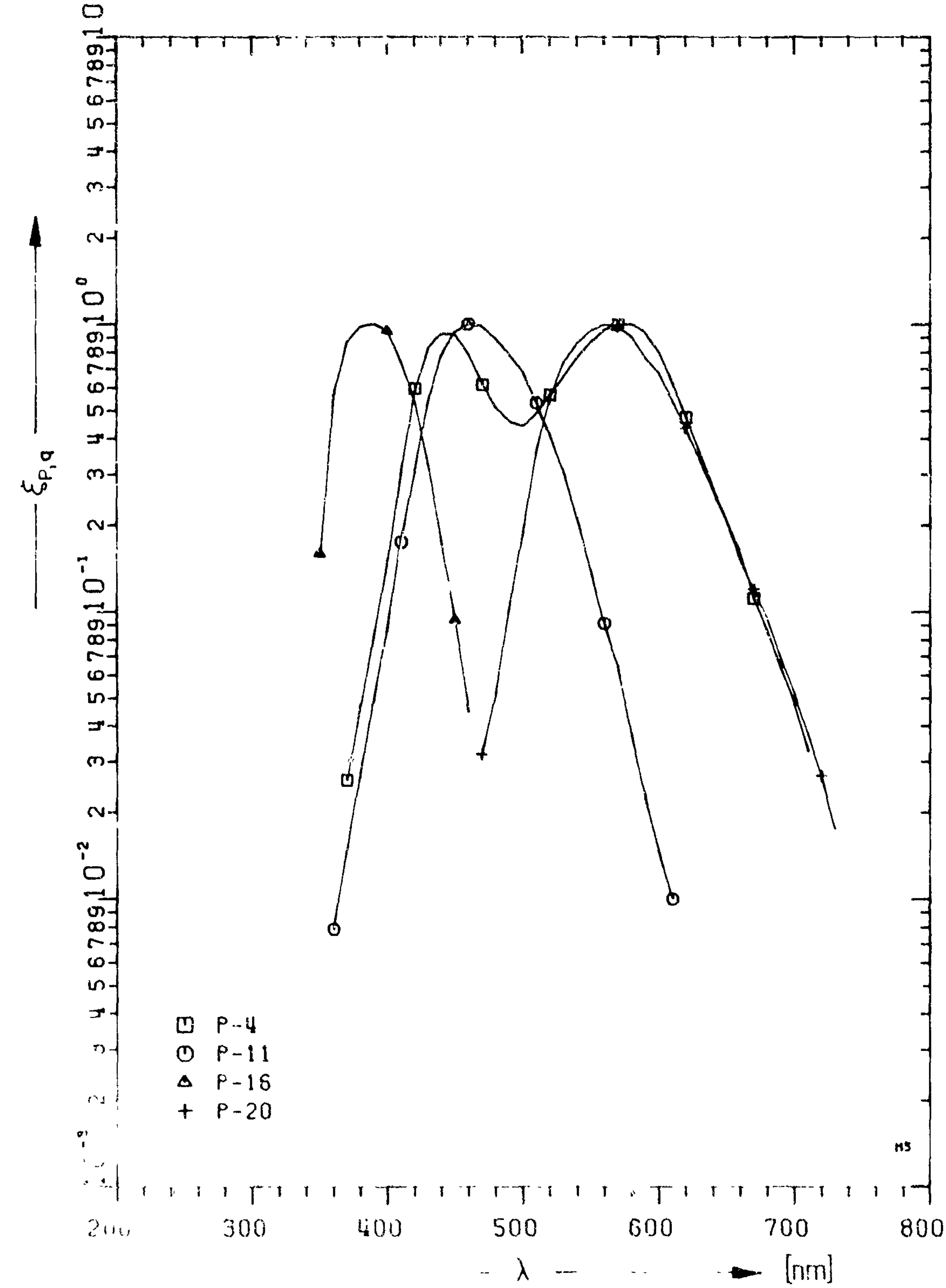


FIG 10B NORMALIZED SPECTRAL EFFICIENCIES, $\xi_{P,J}$, OF PHOSPHOR SCREENS

R. GEBEL, H. SPIEGEL, H. WESTHERDT AND R. HAYSLETT

INTENSIFIER MATCHING PROBLEMS.



...ED SPECTRAL EFFICIENCIES, $\xi_{P,q}$,
PHOSPHOR SCREENS

A. GEBEL, H. SPIEGEL, H. WESTHEROT AND A. HAYSLETT
INTENSIFIER MATCHING PROBLEMS.

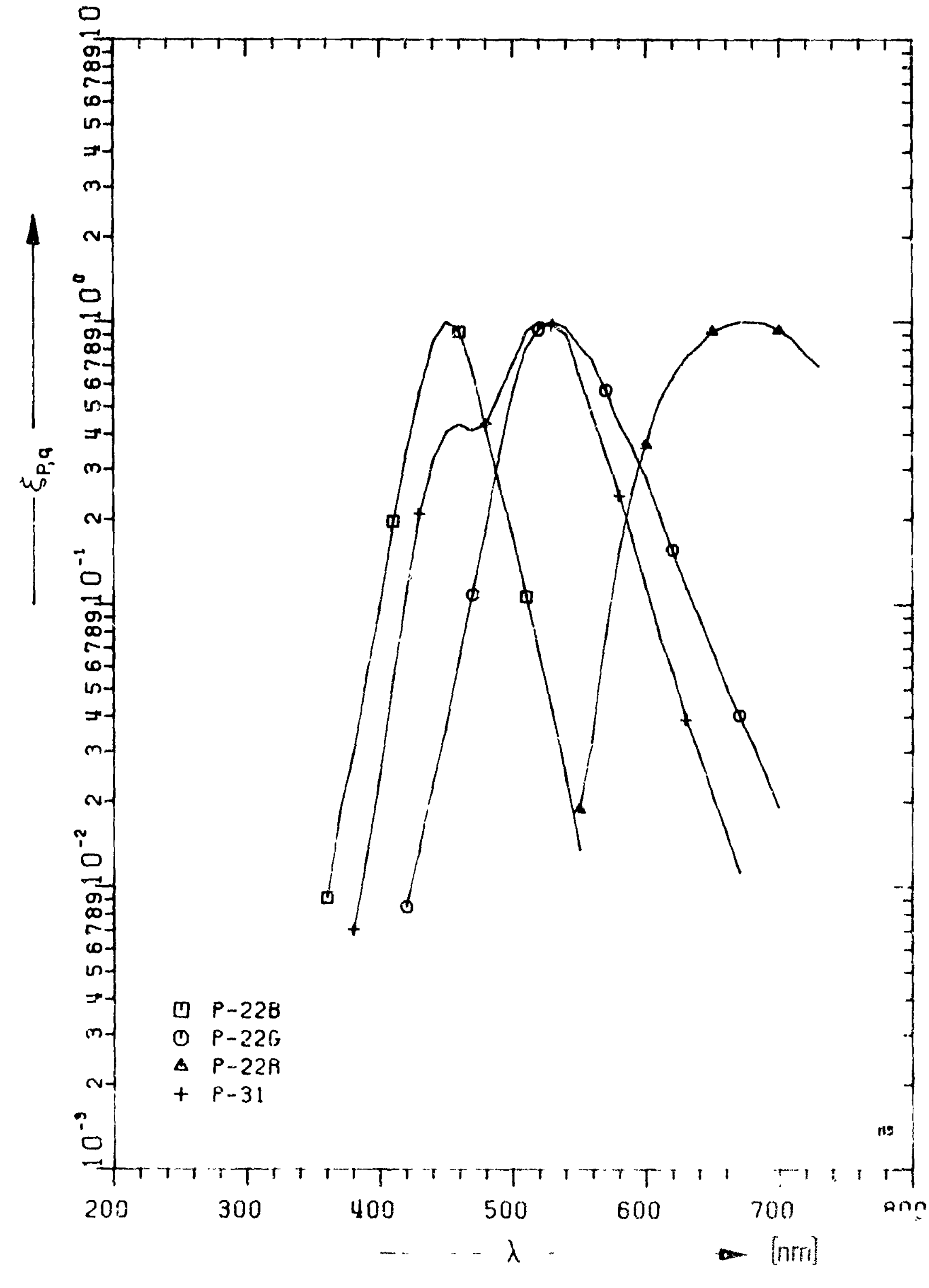


FIG.11B NORMALIZED SPECTRAL EFFICIENCIES, $\xi_{P,q}$, OF PHOSPHOR SCREENS

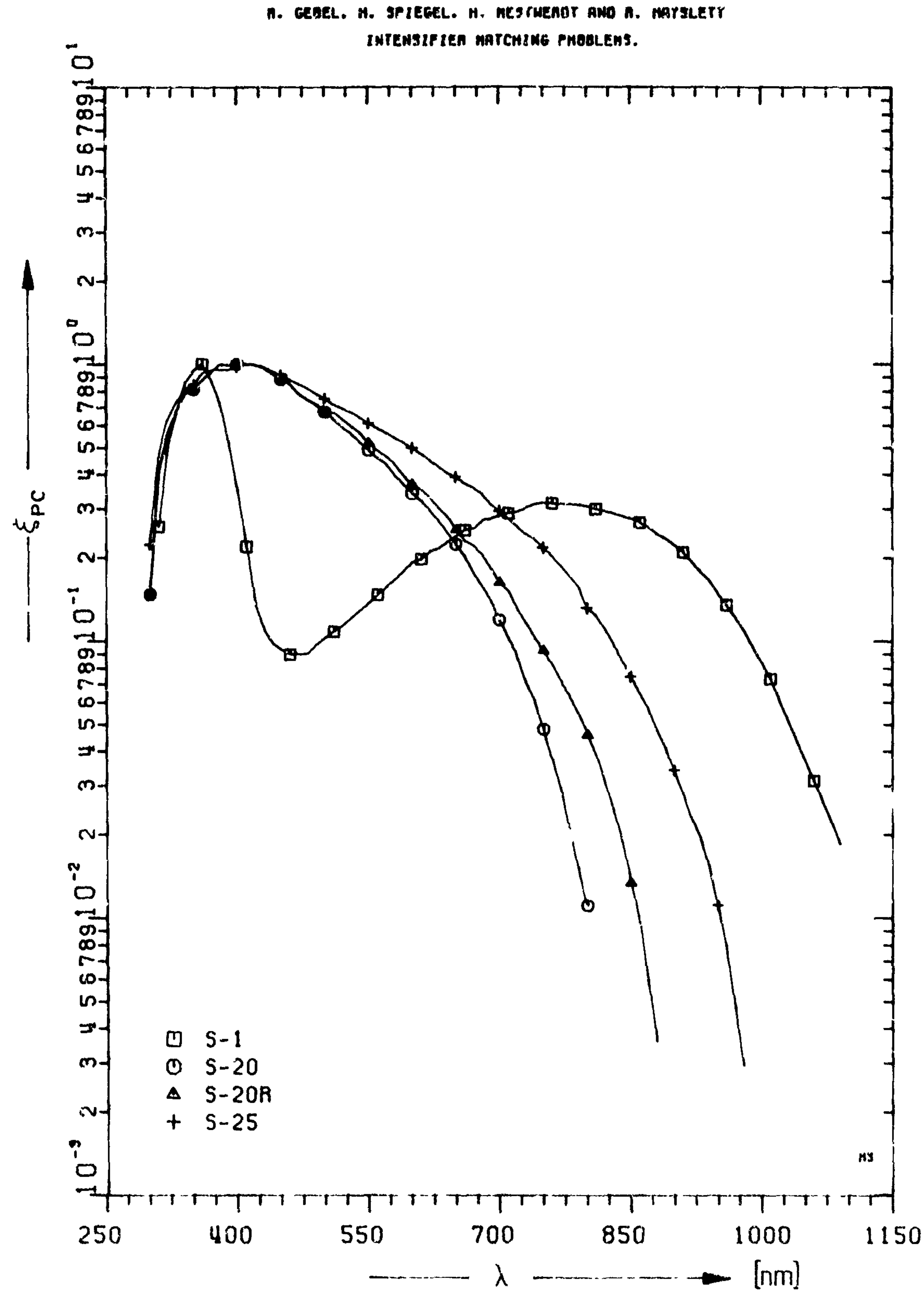


FIG. 12 A. NORMALIZED SPECTRAL EFFICIENCIES, ξ_{PC}, OF PHOTOCATHODES.

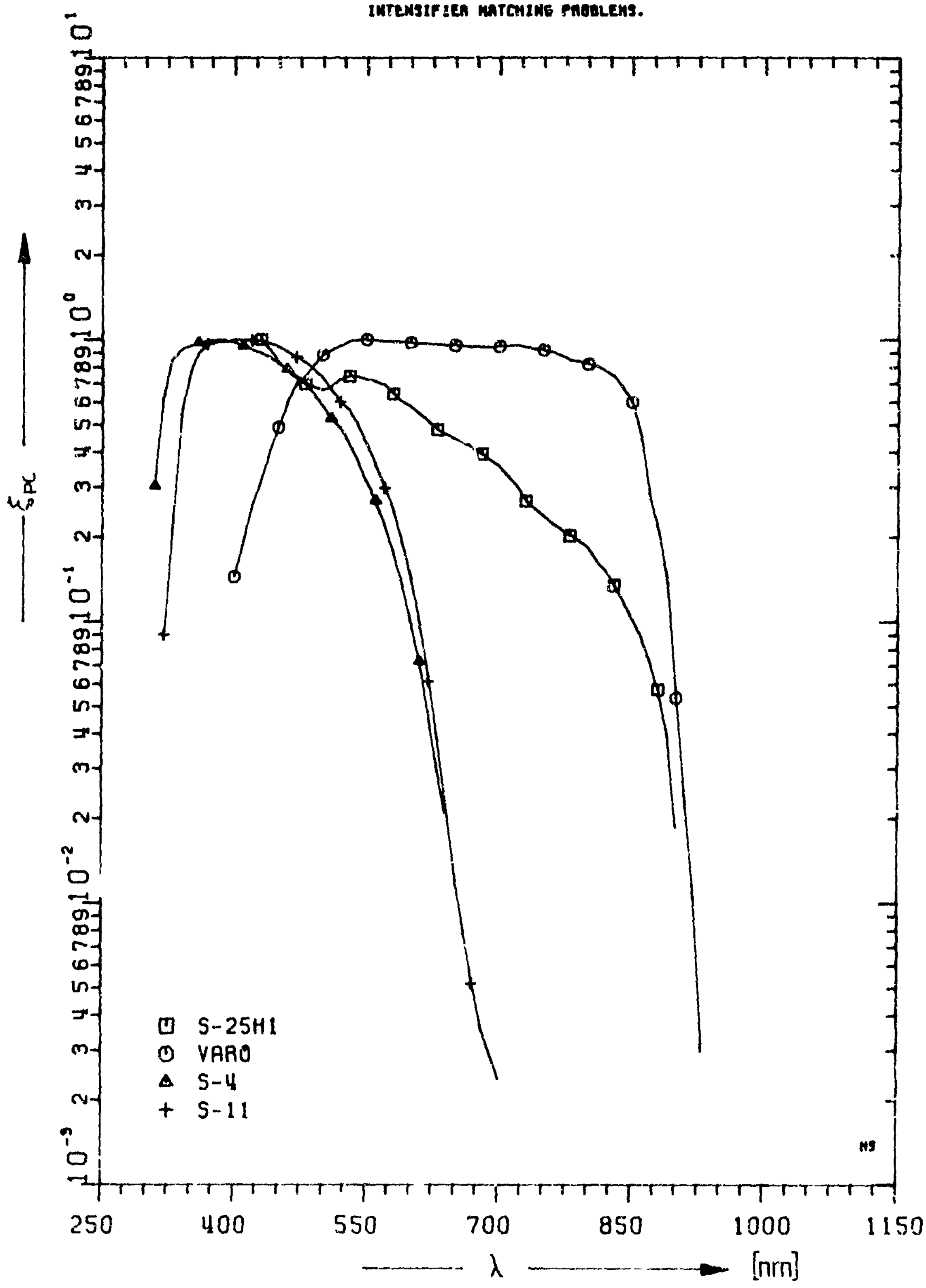


FIG. 12B. NORMALIZED SPECTRAL EFFICIENCIES, ξ_{PC}, OF PHOTOCATHODES.

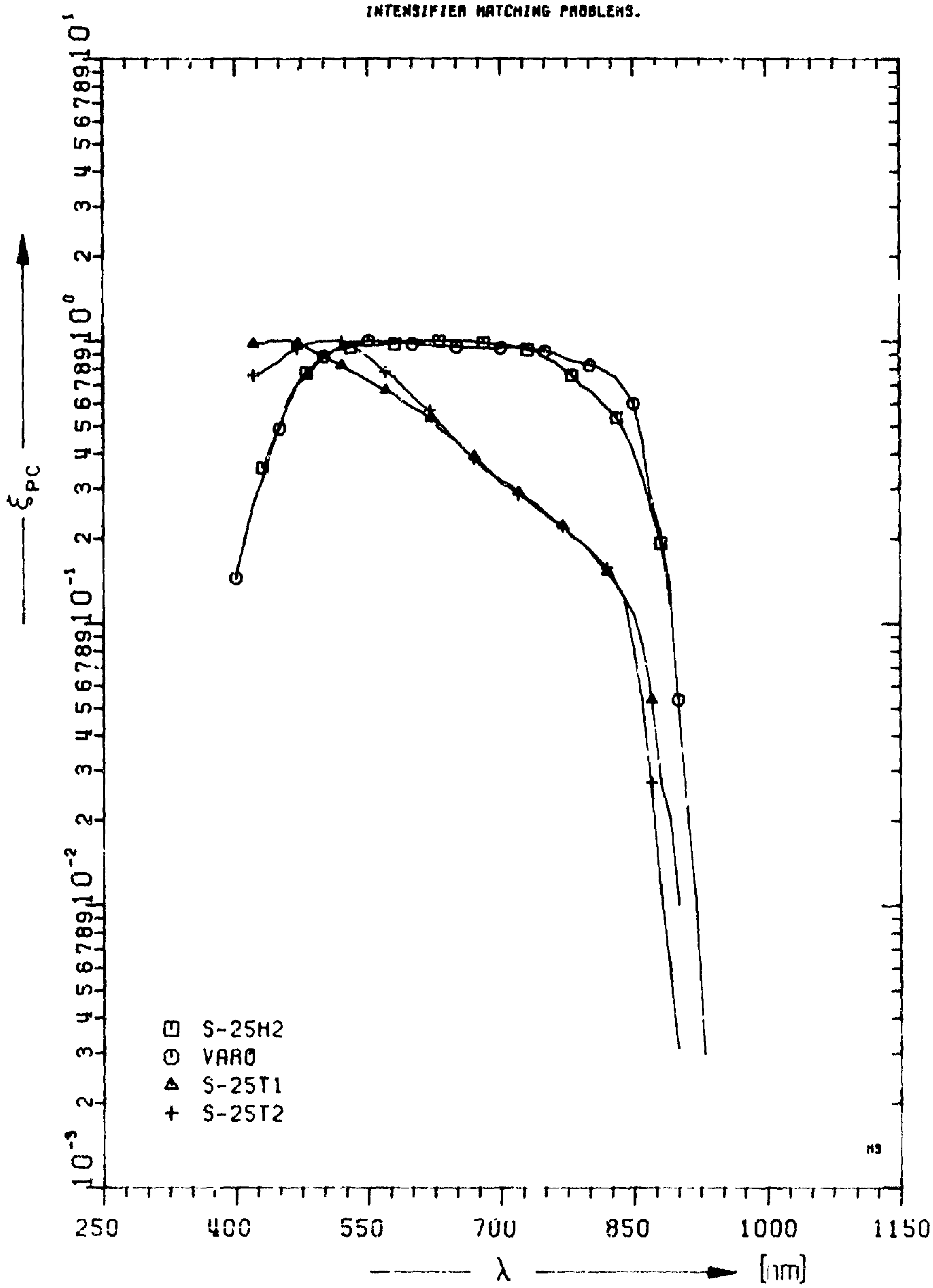


FIG. 12C. NORMALIZED SPECTRAL EFFICIENCIES, ξ_{PC}, OF PHOTOCATHODES.

R. GEBEL, H. SPIEGEL, H. WESTWERDT AND R. HAYSLETT
INTENSIFIER MATCHING PROBLEMS.

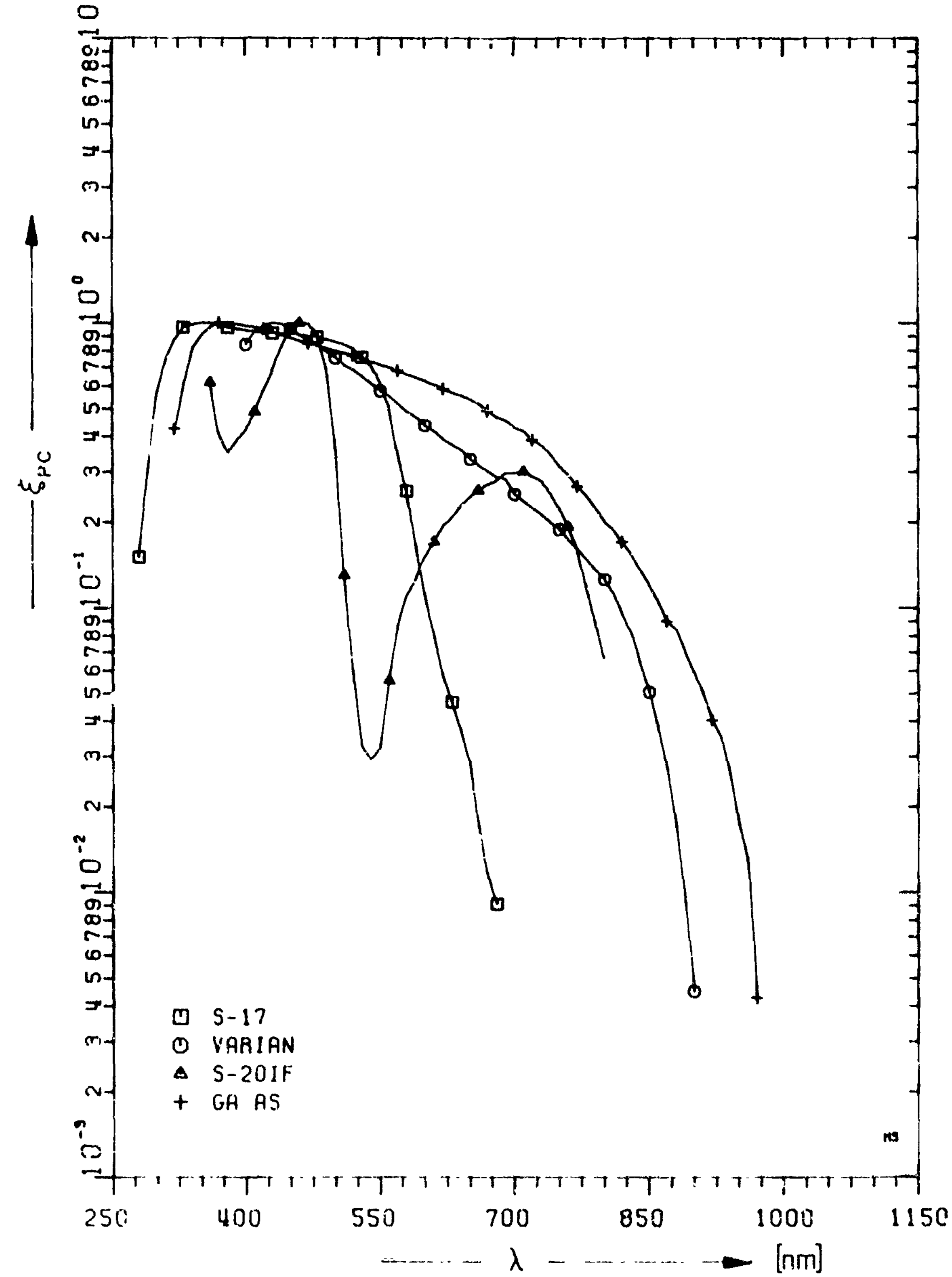


FIG. 12D. NORMALIZED SPECTRAL EFFICIENCIES, ξ_{PC}, OF PHOTOCATHODES.

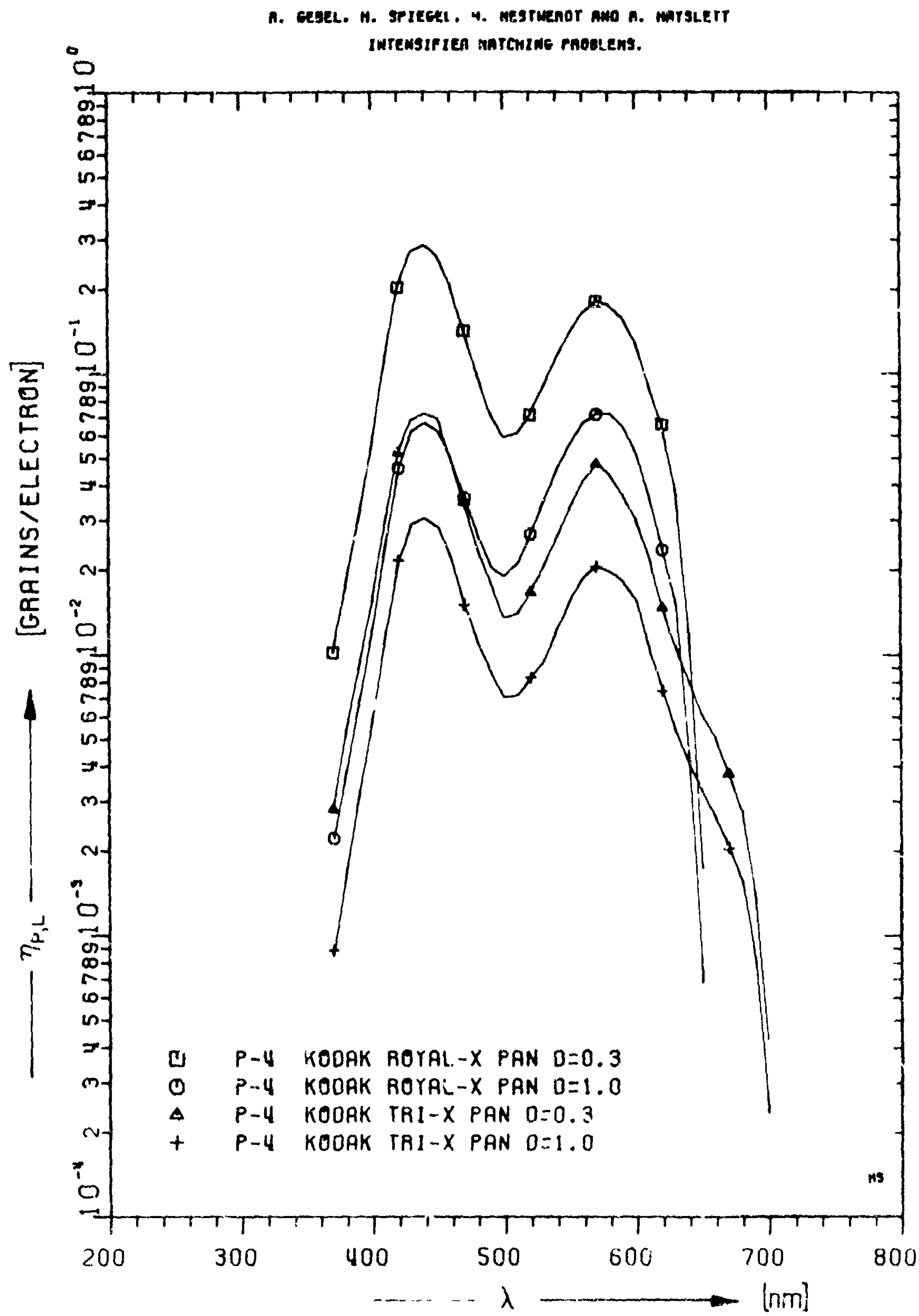


FIG. 13A. SPECTRAL RESPONSE OF CONVERSION YIELD, $\eta_{P,L}$, FOR PHOSPHOR SCREEN-FILM COMBINATIONS

A. GEBEL, H. SPIEGEL, H. WESTHERDT AND A. M...LEIT

INTENSIFIER MATCHING PROBLEMS.

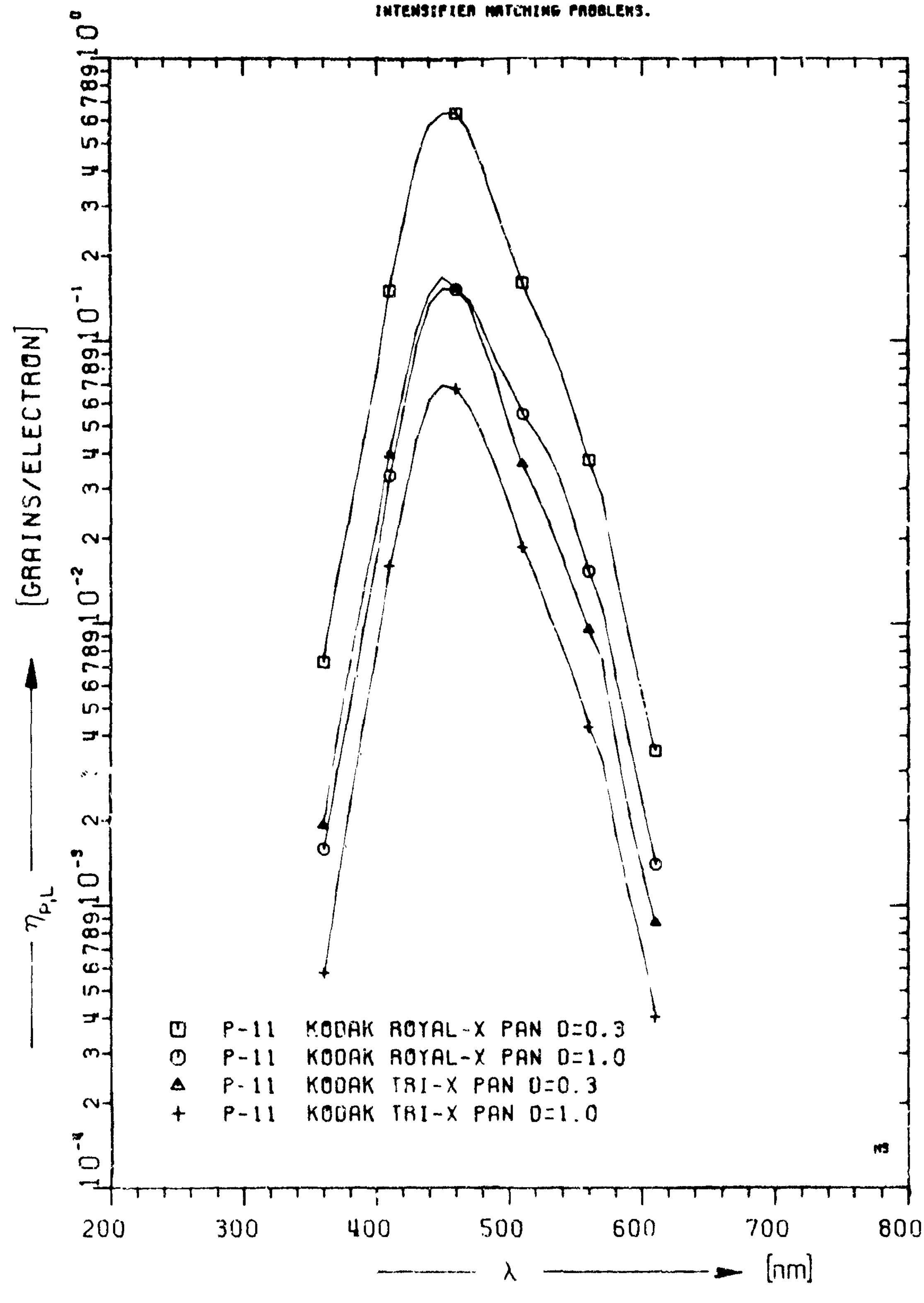


FIG 13B SPECTRAL RESPONSE OF CONVERSION YIELD, $\eta_{P,L}$, FOR PHOSPHOR SCREEN-FILM COMBINATIONS

A. GEBEL, H. SPIEGEL, H. WESTWERDT AND A. HAYSLETT
INTENSIFIER MATCHING PROBLEMS.

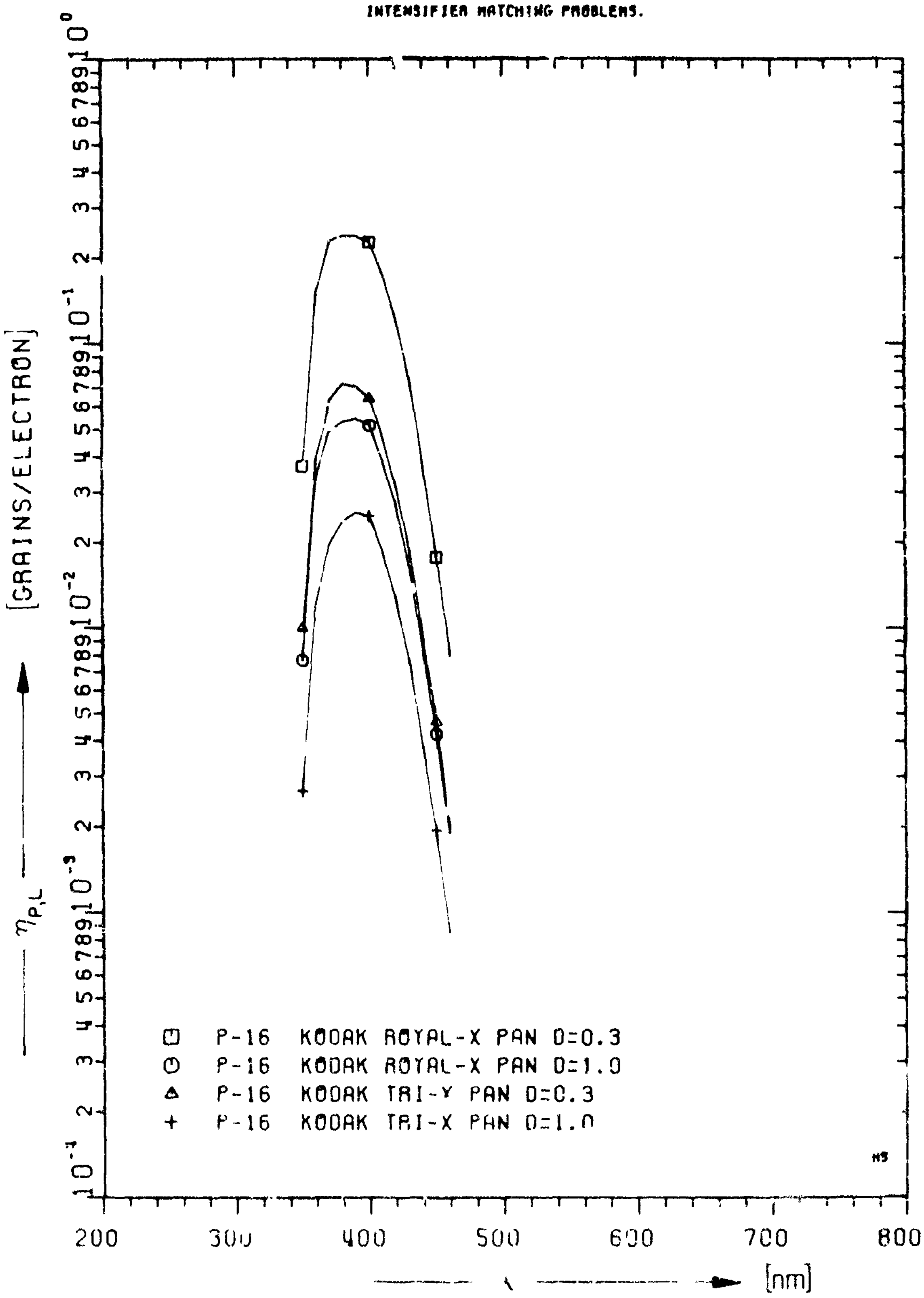


FIG 13C SPECTRAL RESPONSE OF CONVERSION YIELD, $\eta_{P,L}$ FOR PHOSPHOR SCREEN-FILM COMBINATIONS

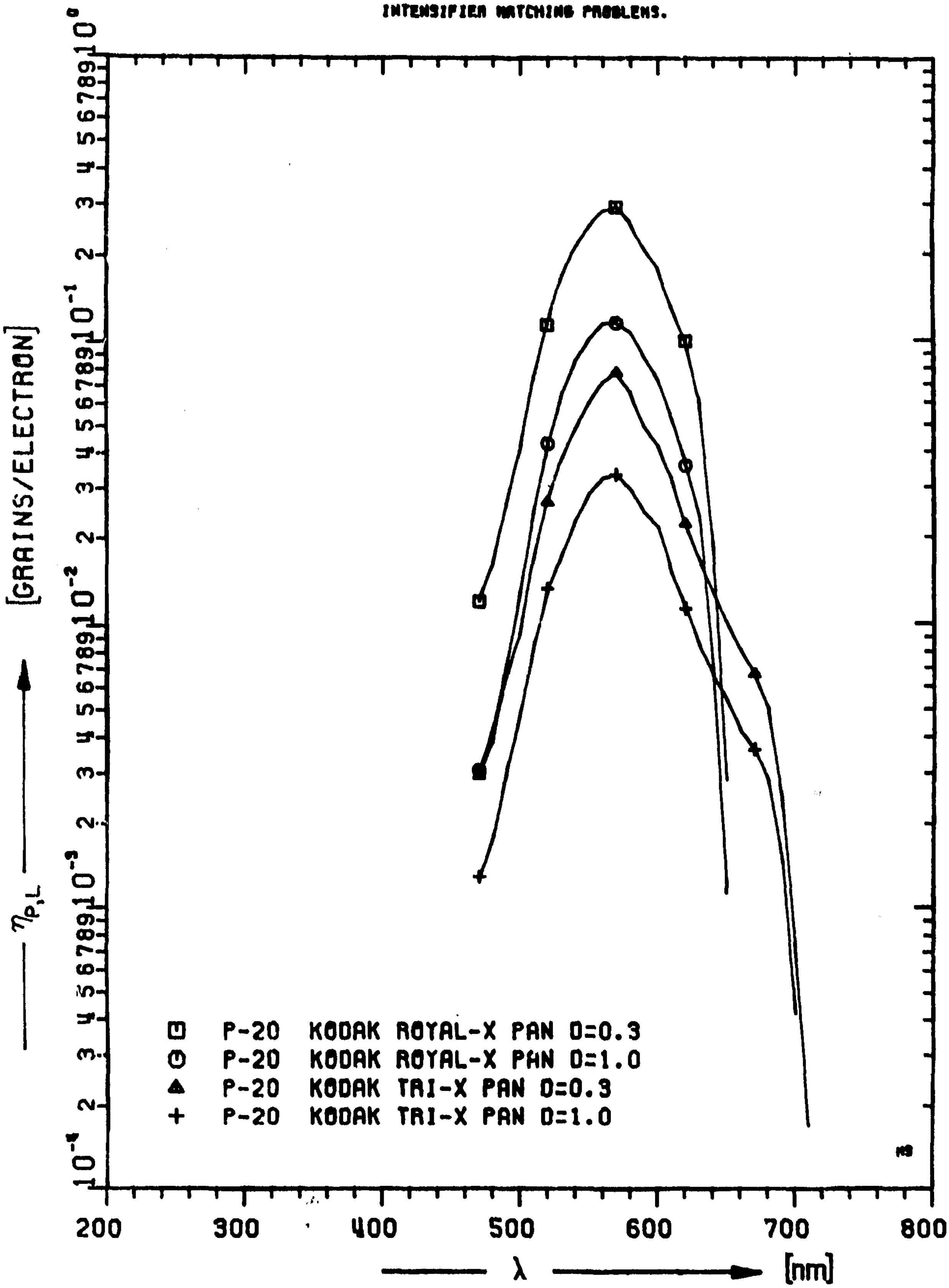


FIG. 13D. SPECTRAL RESPONSE OF CONVERSION YIELD, $\eta_{P,L}$, FOR PHOSPHOR SCREEN-FILM COMBINATIONS

A. GEBEL, H. SPIEGEL, H. WESTWERDT AND A. HAYSLETT

INTENSIFIER MATCHING PROBLEMS.

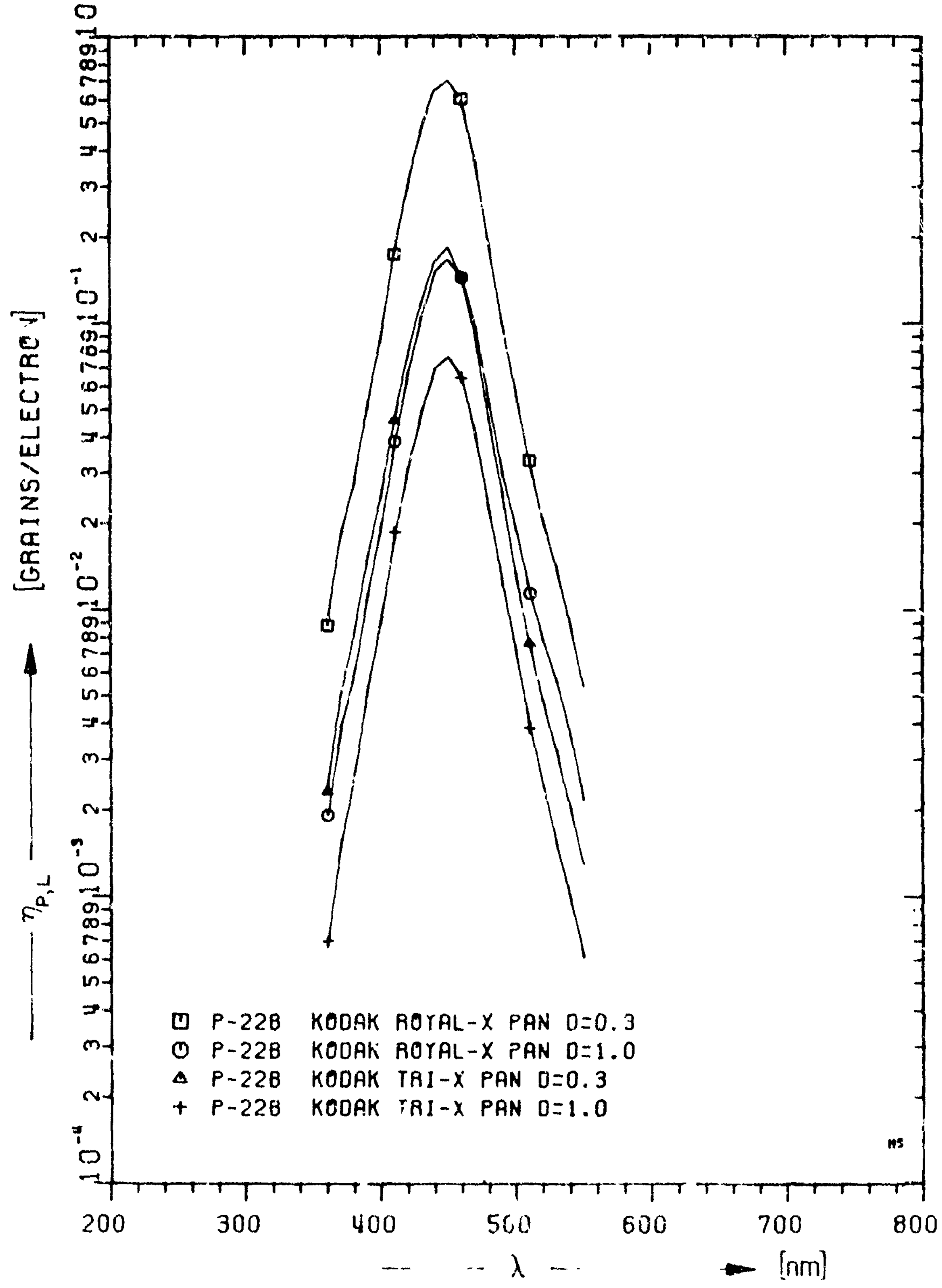


FIG. 13E. SPECTRAL RESPONSE OF CONVERSION YIELD, $\eta_{P,L}$, FOR PHOSPHOR SCREEN-FILM COMBINATIONS

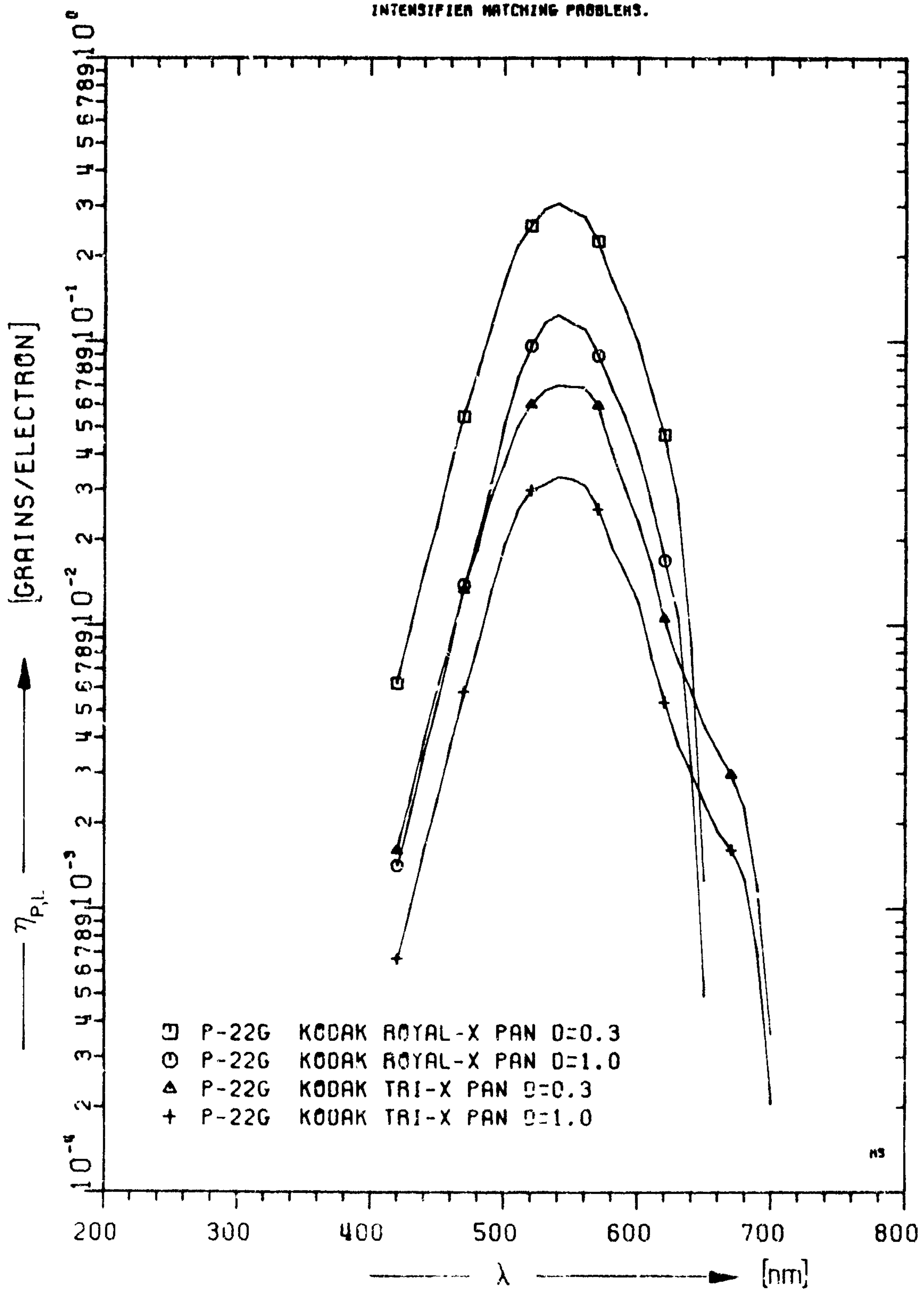


FIG. 13F. SPECTRAL RESPONSE OF CONVERSION YIELD, $\eta_{P,L}$, FOR PHOSPHOR SCREEN-FILM COMBINATIONS

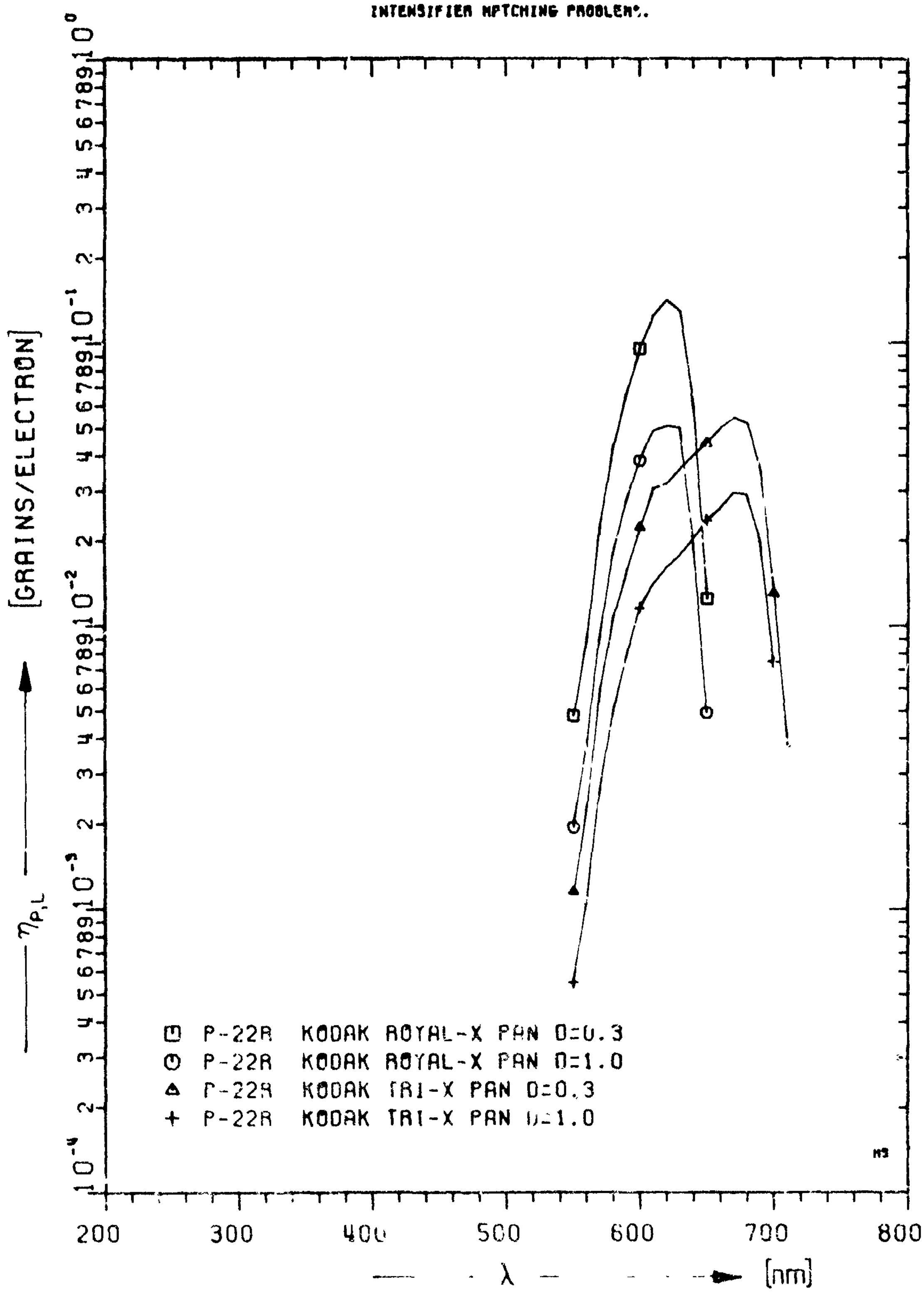


FIG. 13G. SPECTRAL RESPONSE OF CONVERSION YIELD, $\eta_{P,L}$, FOR PHOSPHOR SCREEN-FILM COMBINATIONS

A. GEBEL, H. SPIEGEL, H. WESTWERDT AND A. HAYSLETT
INTENSIFIER MATCHING PROBLEMS.

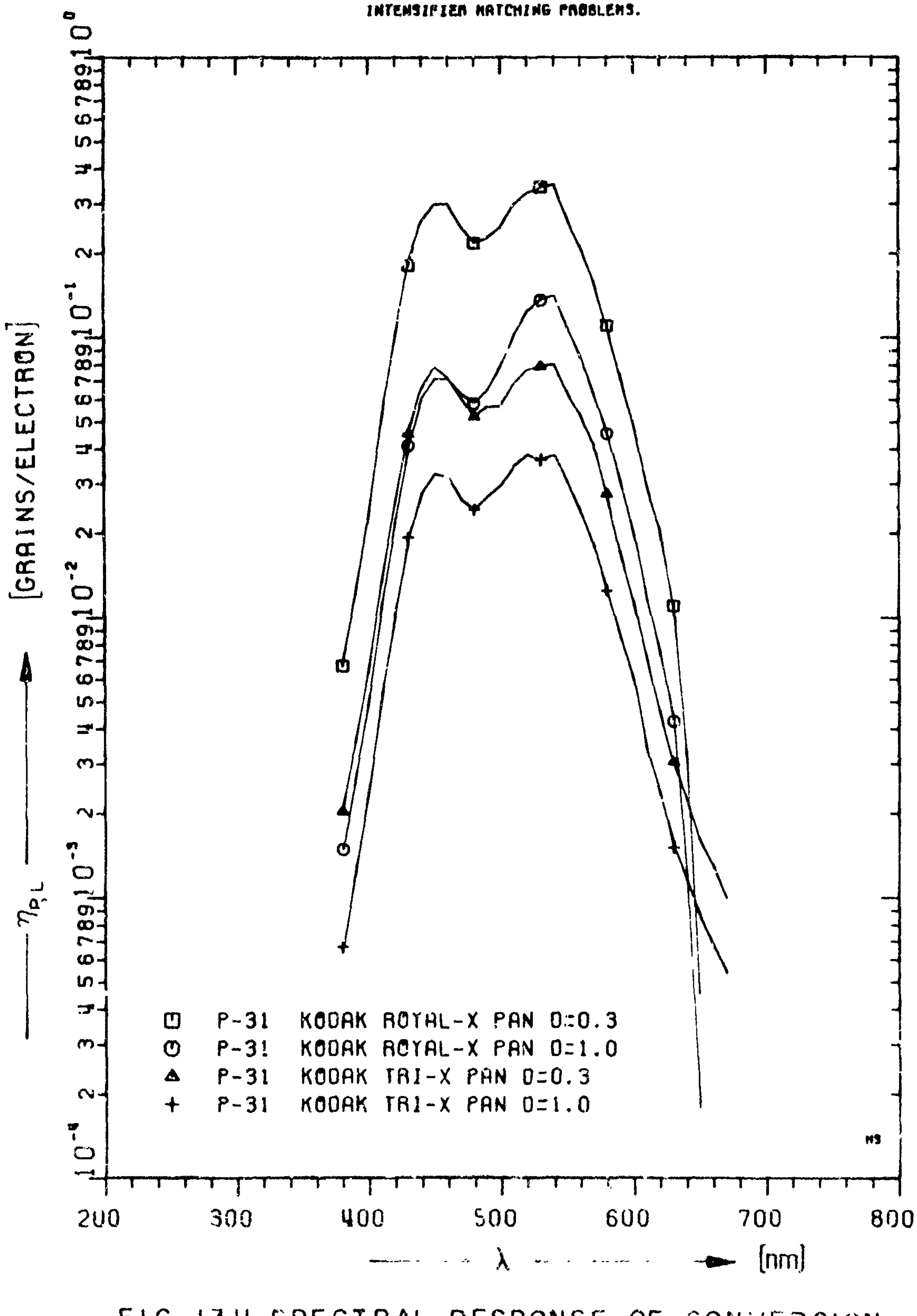


FIG. 13H. SPECTRAL RESPONSE OF CONVERSION YIELD, $\eta_{P,L}$, FOR PHOSPHOR SCREEN-FILM COMBINATIONS

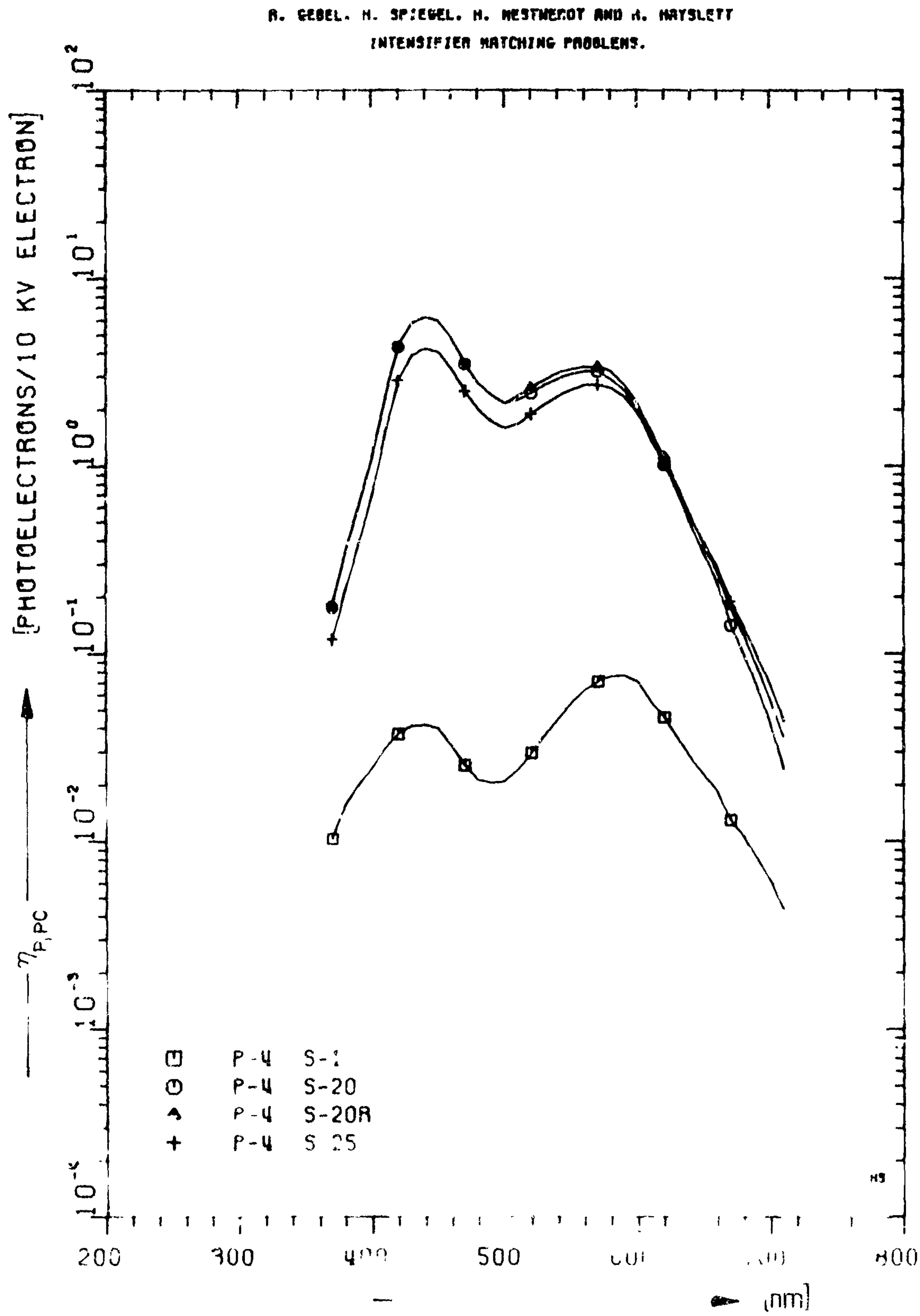


FIG 14A SPECTRAL RESPONSE, $\eta_{P,PC}$ ... SCREEN-PHOTOCATHODE COMBINATIONS

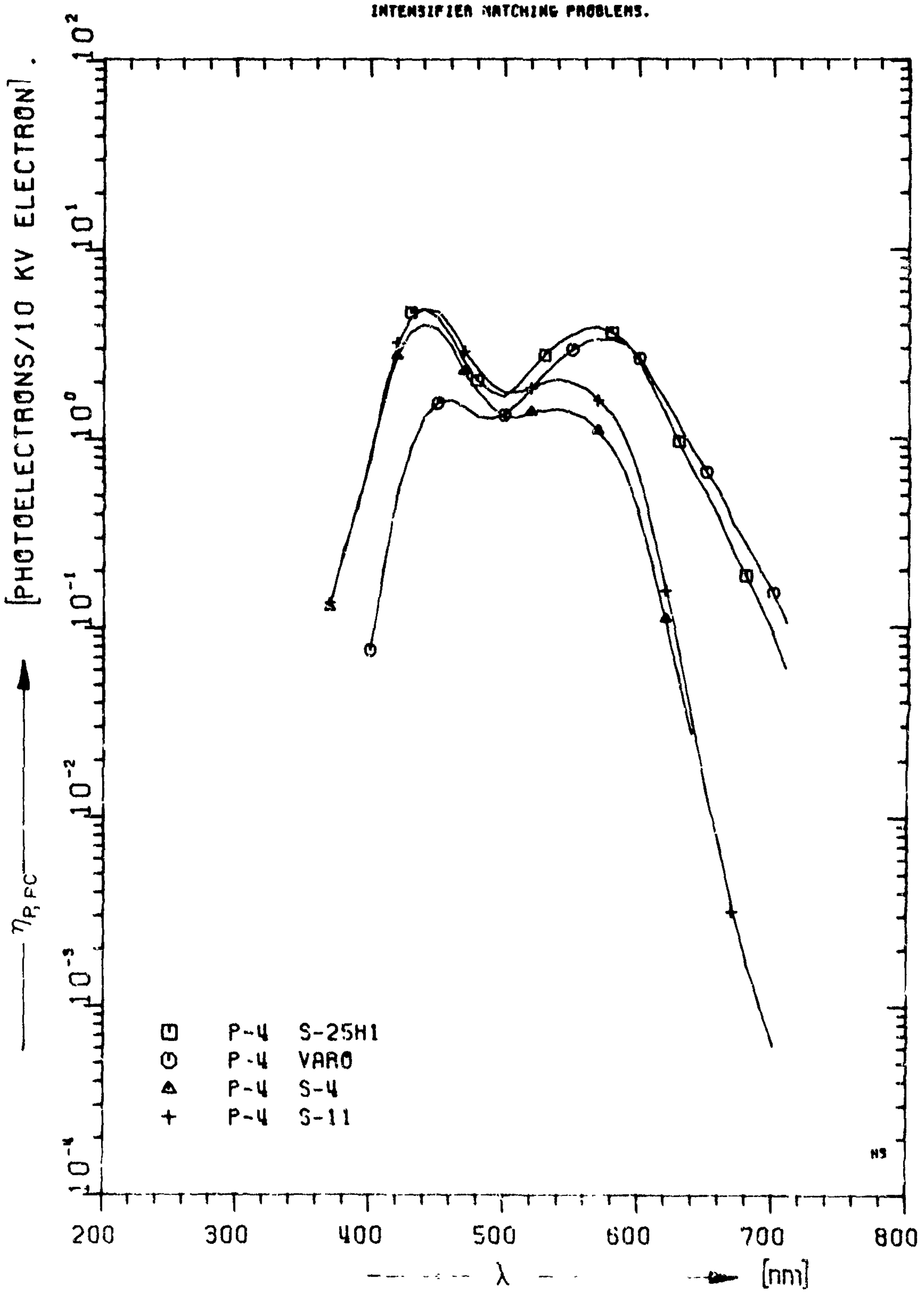


FIG. 148. SPECTRAL RESPONSE, $\eta_{P,PC}$, OF PHOSPHOR SCREEN - PHOTOCATHODE COMBINATIONS

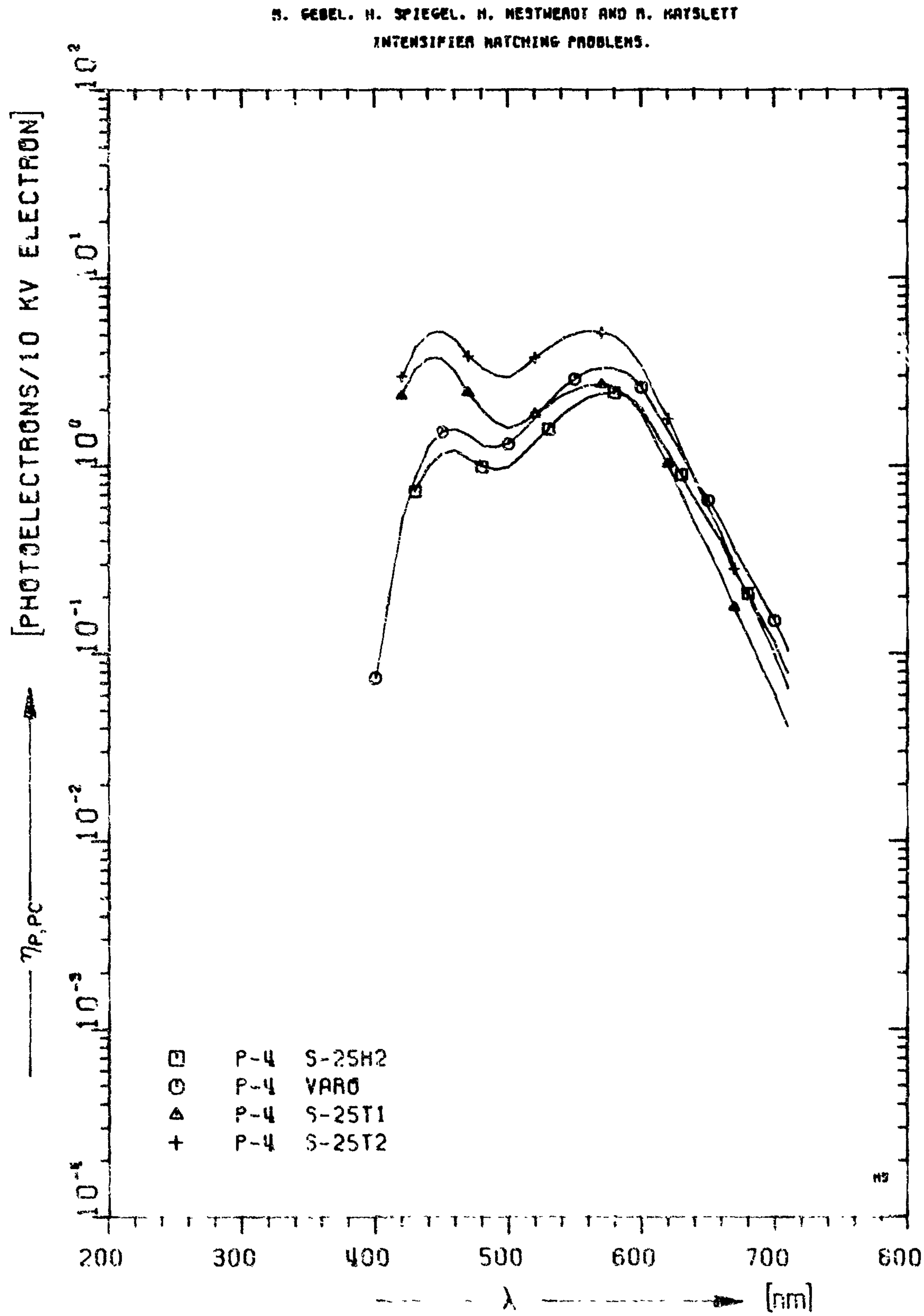


FIG.14C. SPECTRAL RESPONSE, $\eta_{P,PC}$, OF PHOSPHOR SCREEN- PHOTOCATHODE COMBINATIONS.

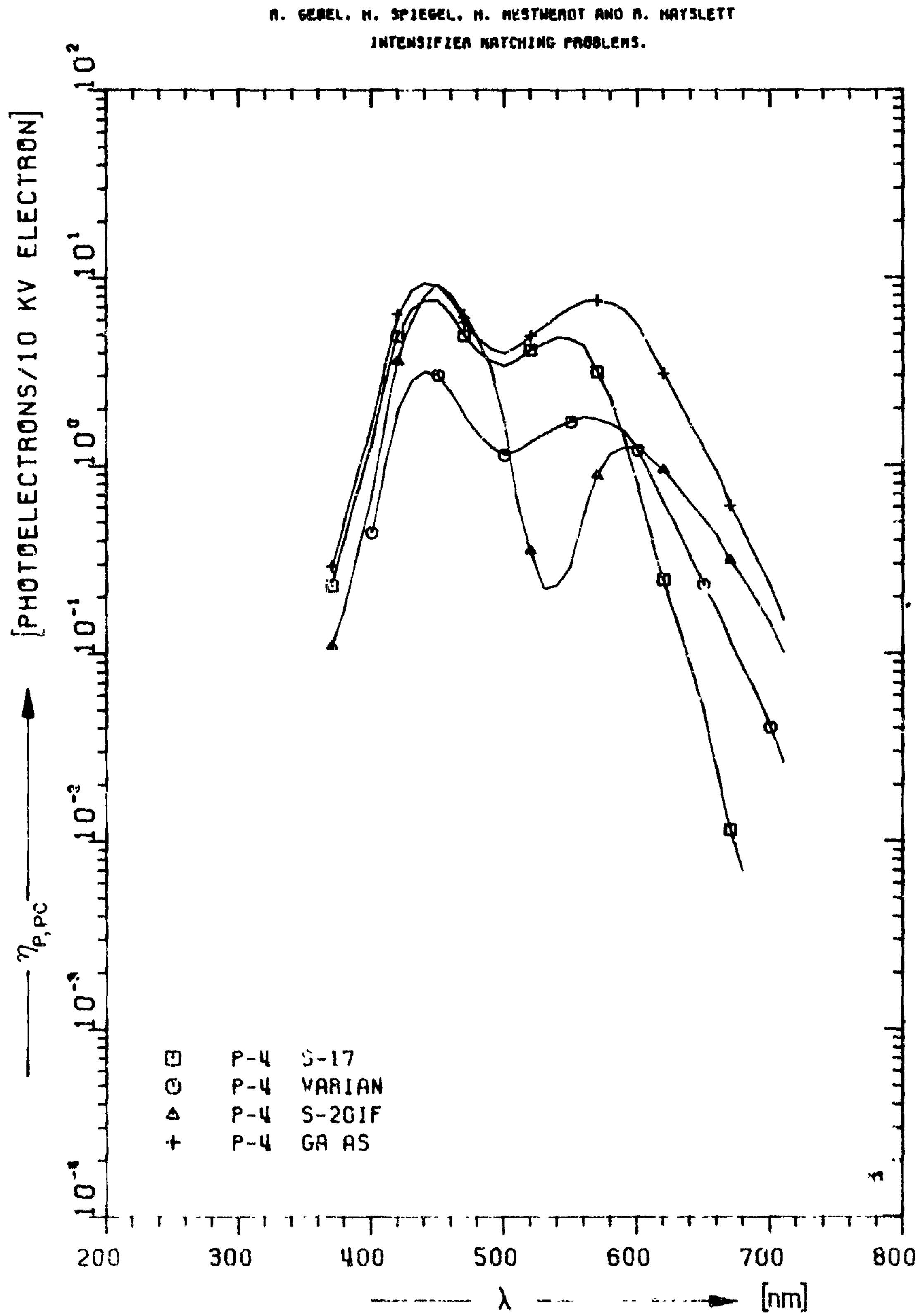


FIG.14D SPECTRAL RESPONSE, $\eta_{o,PC}$, OF PHOSPHOR SCREEN-PHOTOCATHODE COMBINATIONS.

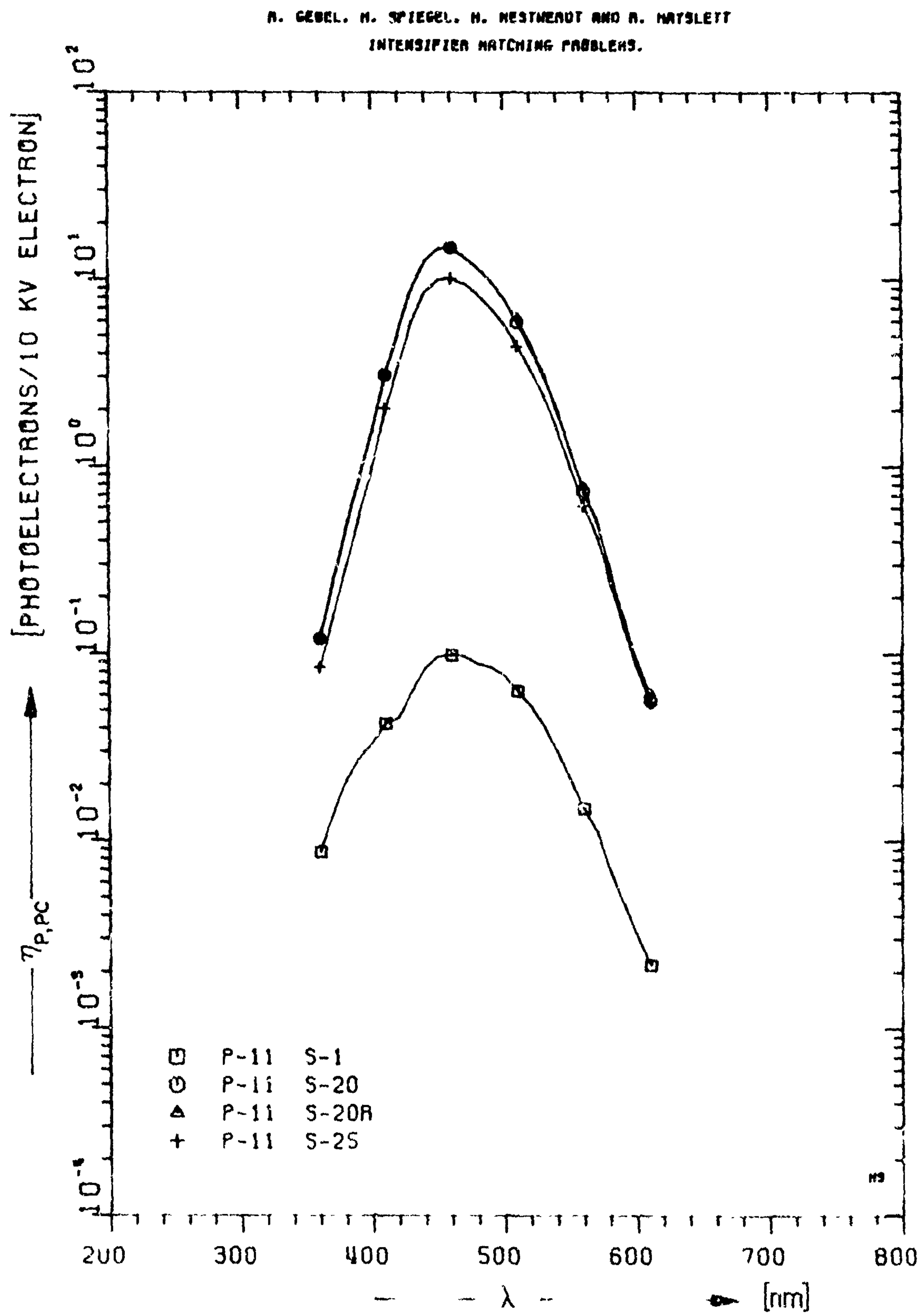


FIG.15A. SPECTRAL RESPONSE, $\eta_{P,PC}$, OF PHOSPHOR SCREEN - PHOTOCATHODE COMBINATIONS.

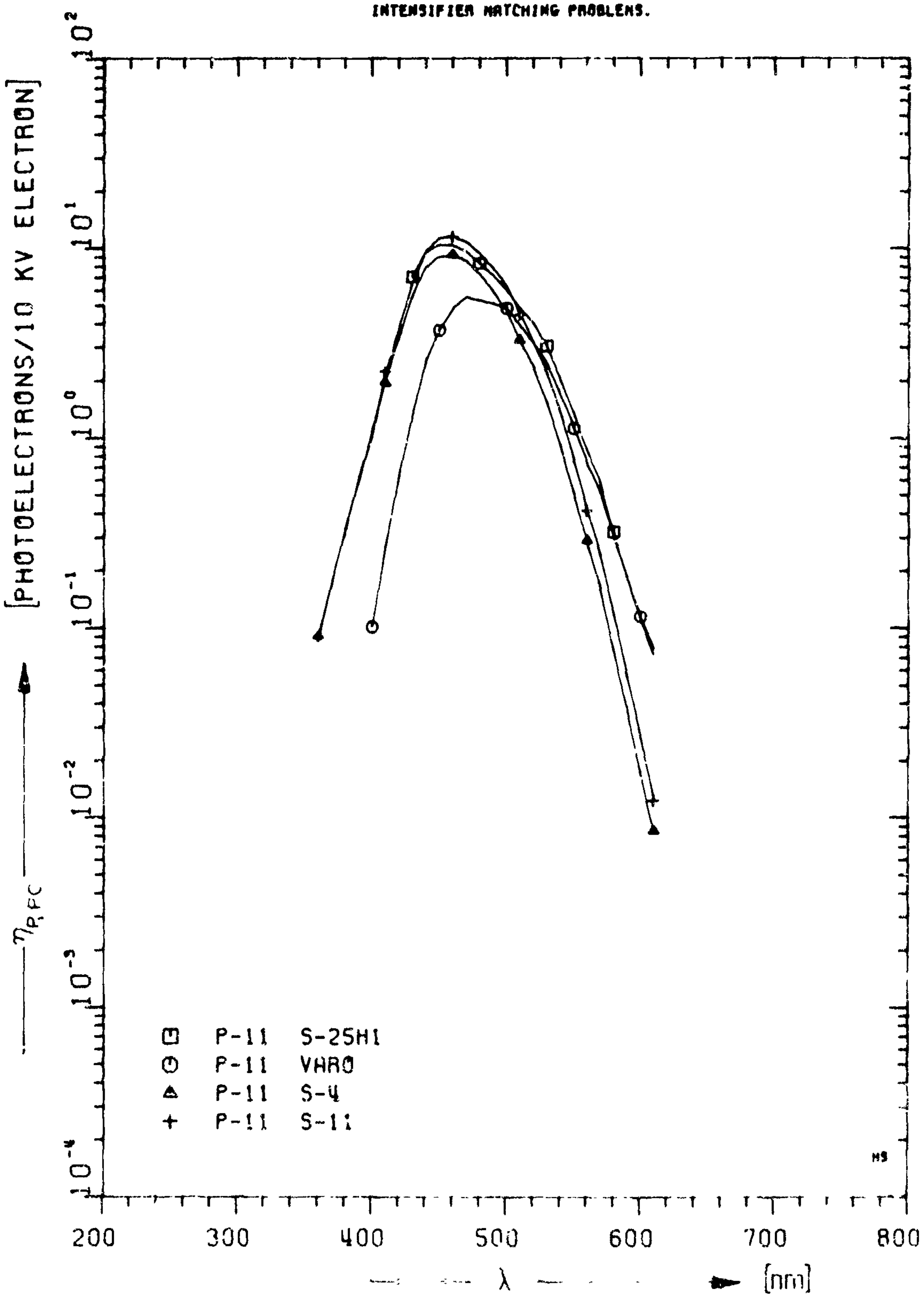


FIG 15B. SPECTRAL RESPONSE, $\eta_{P,PC}$, OF PHOSPHOR SCREEN - PHOTOCATHODE COMBINATIONS

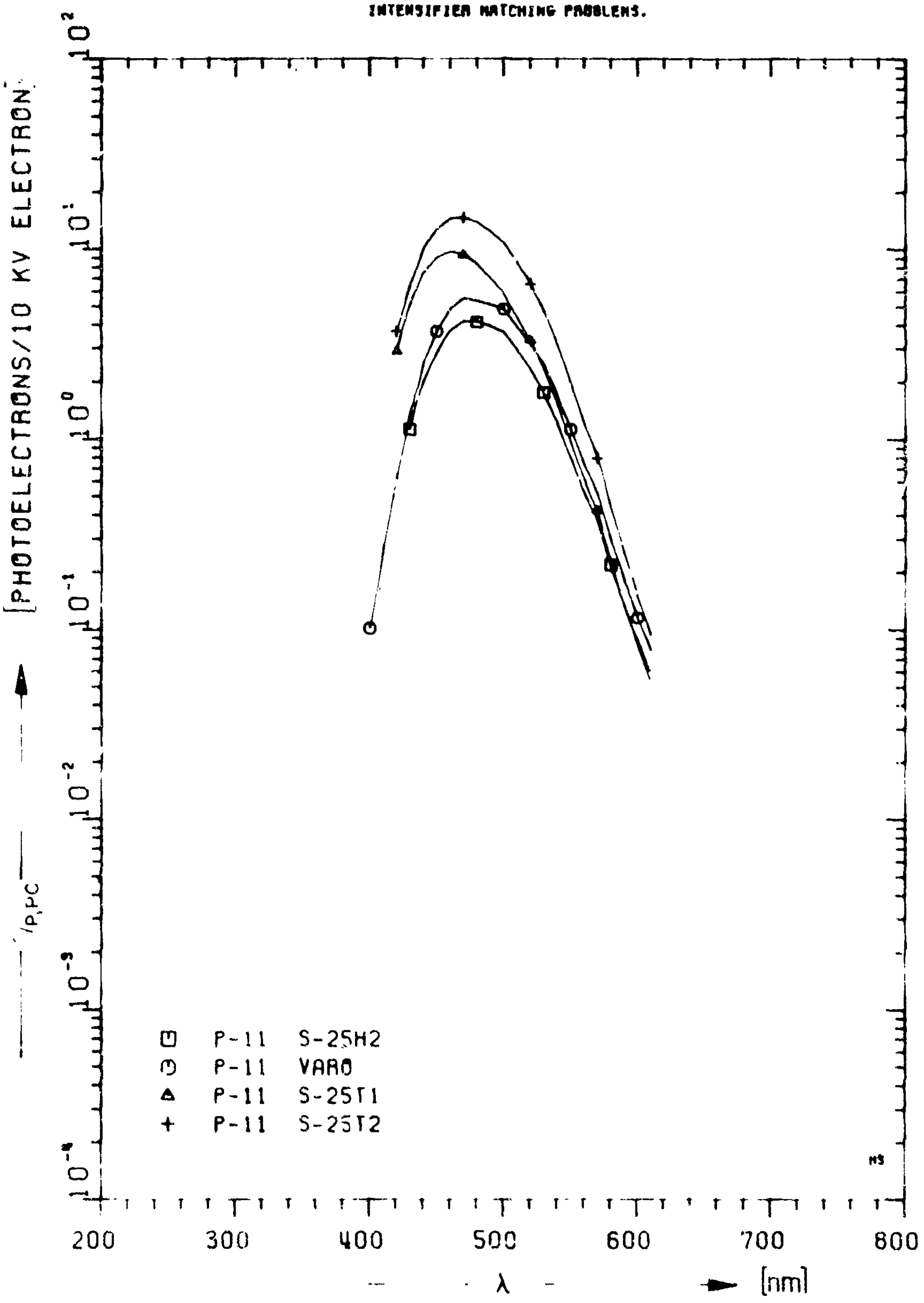


FIG.15C SPECTRAL RESPONSE, $\eta_{P,PC}$, OF PHOSPHOR SCREEN-PHOTOCATHODE COMBINATIONS

A. GEBEL, H. SPIEGEL, H. WESTHEAST AND A. HAYSLETT

INTENSIFIER MATCHING PROBLEMS.

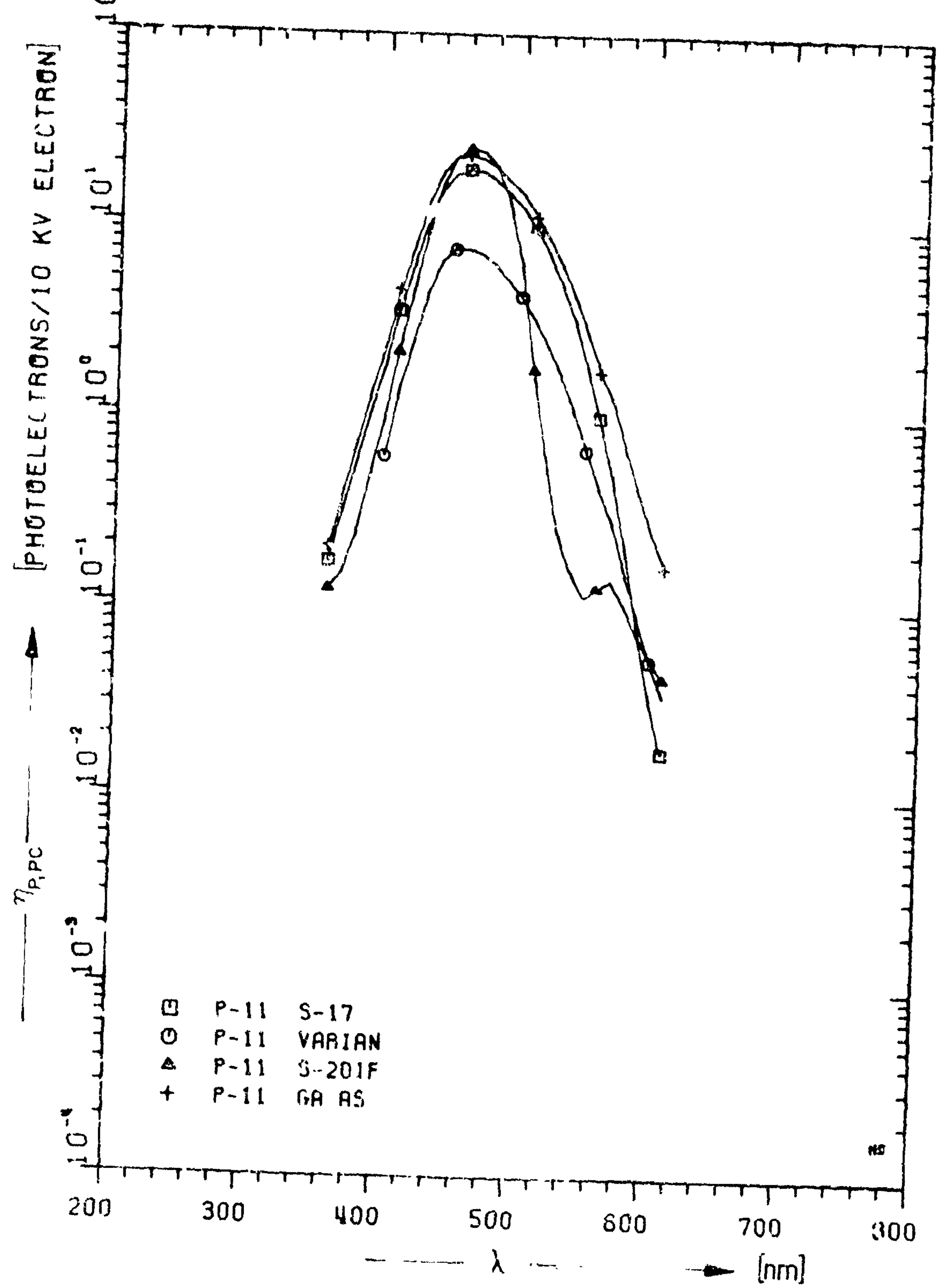


FIG. 15D. SPECTRAL RESPONSE, $\eta_{P,PC}$, OF PHOSPHOR SCREEN-PHOTOCATHODE COMBINATIONS.

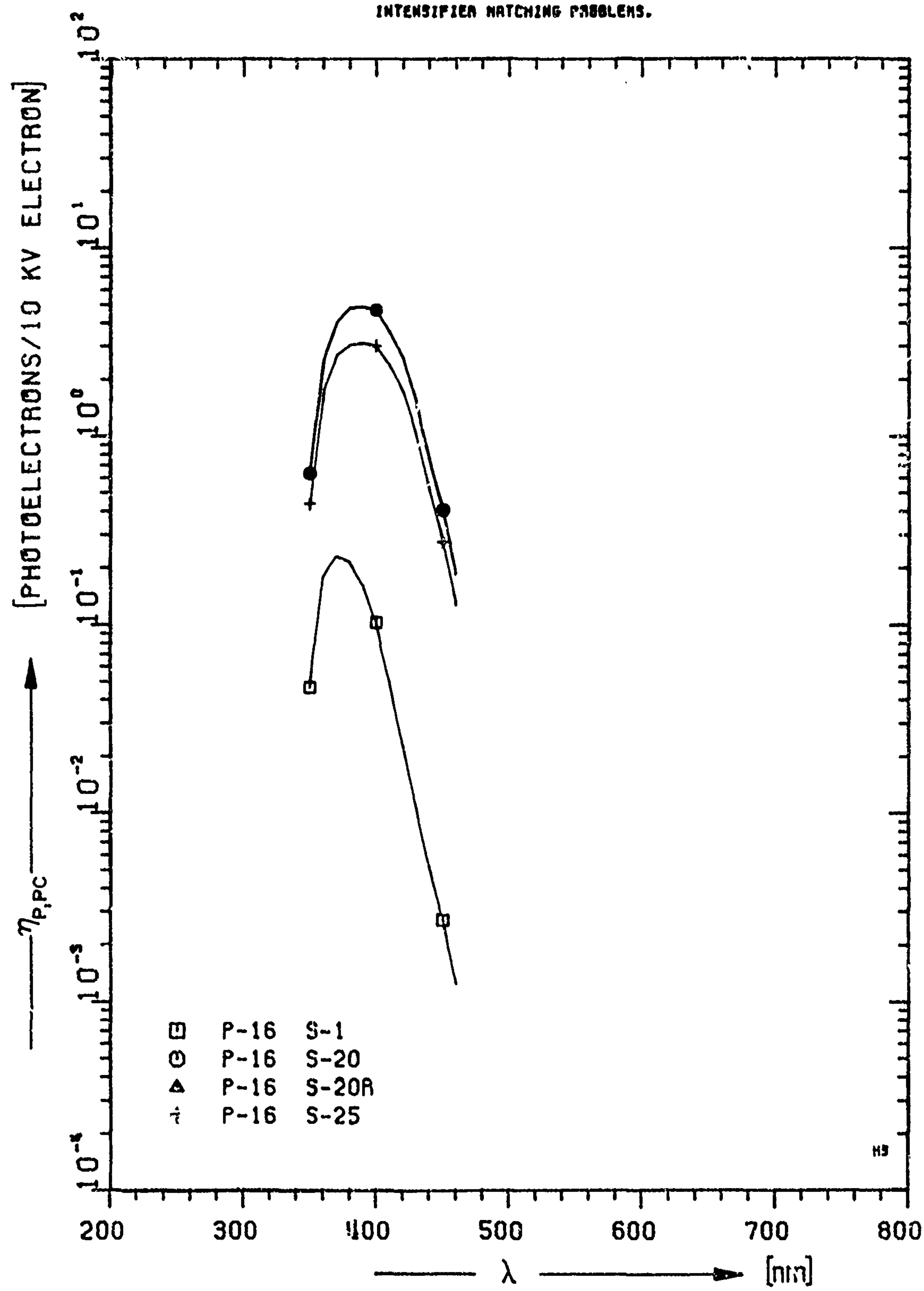


FIG.16A. SPECTRAL RESPONSE, $\eta_{P,PC}$, OF PHOSPHOR SCREEN-PHOTOCATHODE COMBINATIONS.

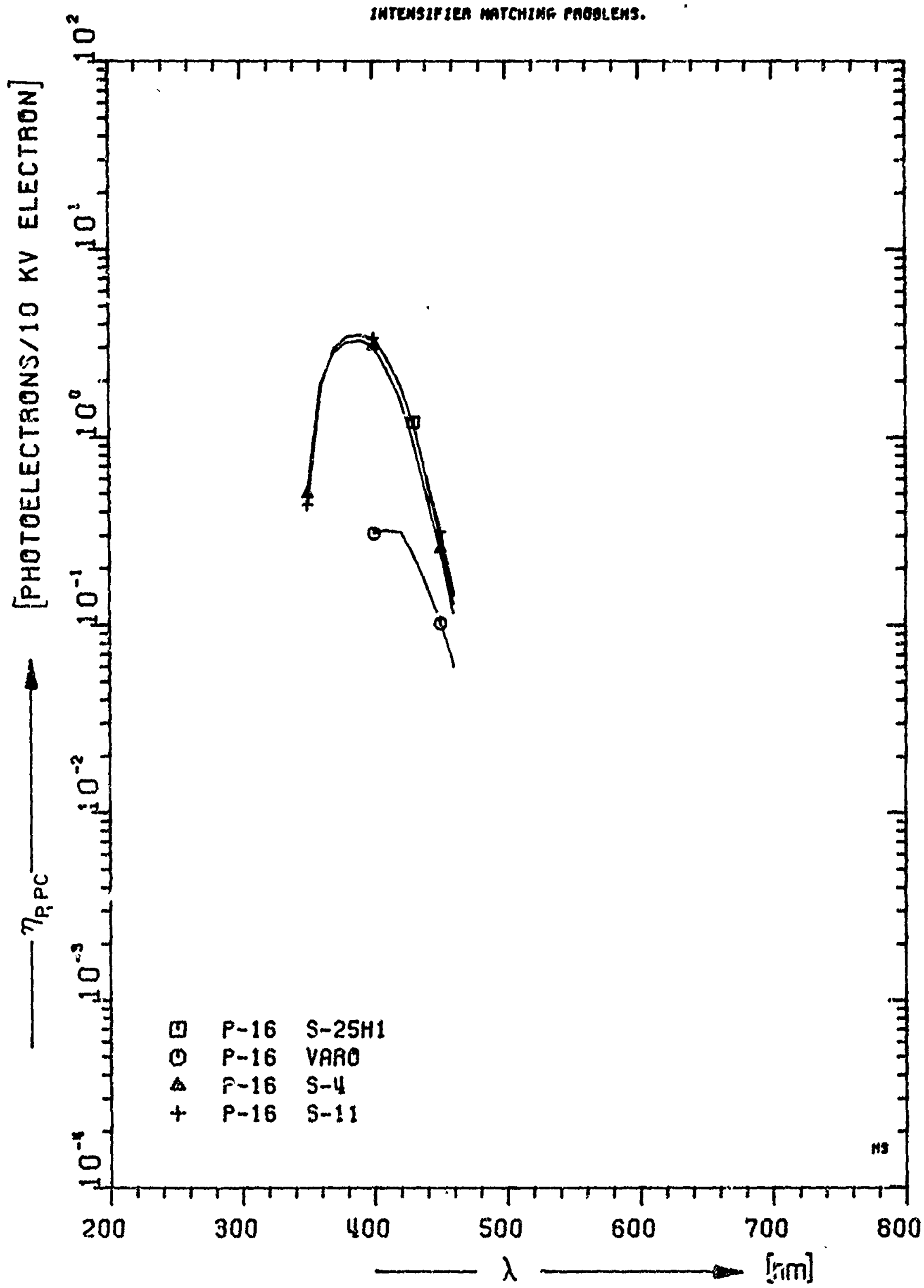


FIG.16B. SPECTRAL RESPONSE, $\eta_{P,PC}$, OF PHOSPHOR SCREEN-PHOTOCATHODE COMBINATIONS.

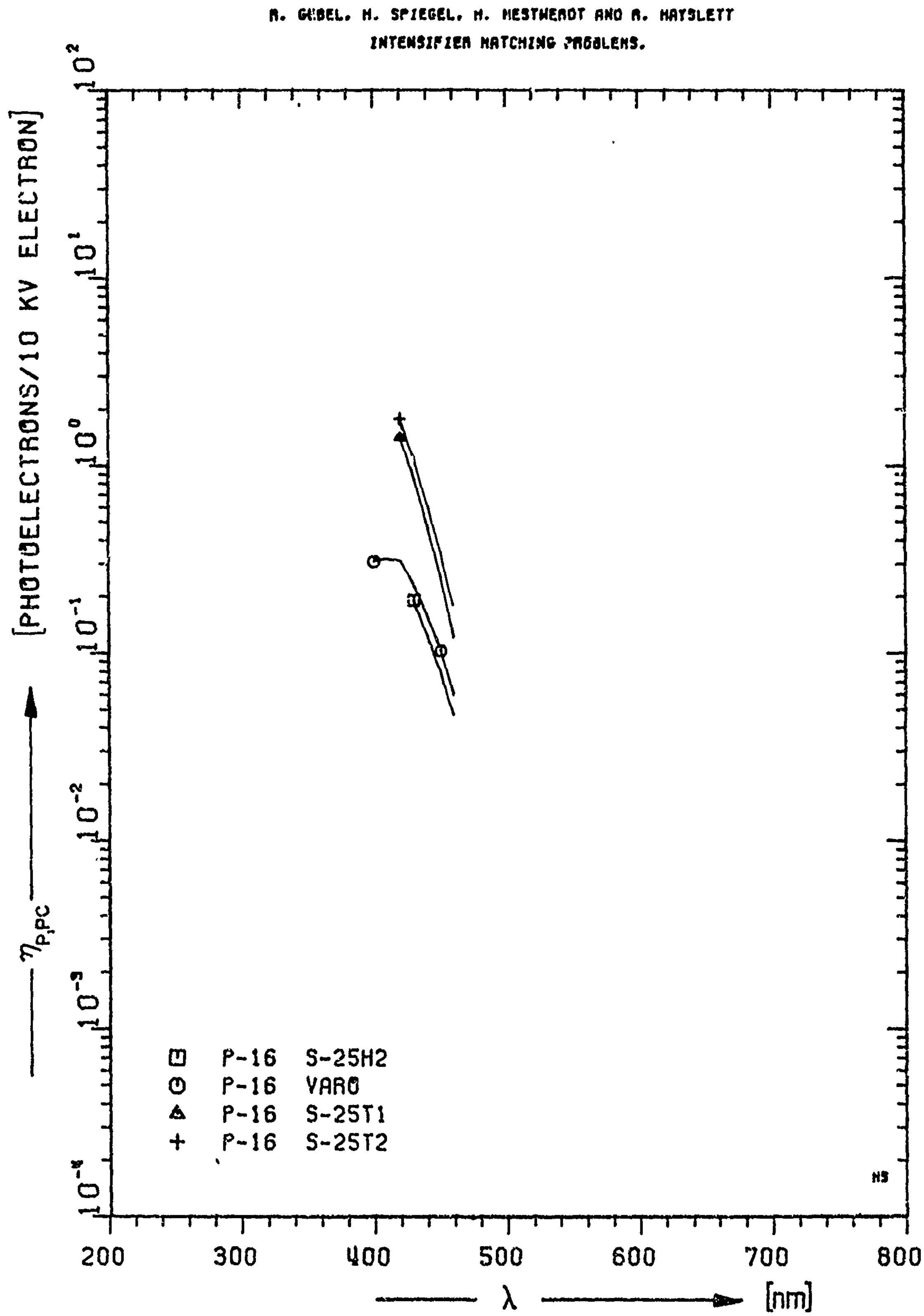


FIG.16C. SPECTRAL RESPONSE, $\eta_{P,PC}$, OF PHOSPHOR SCREEN - PHOTOCATHODE COMBINATIONS.

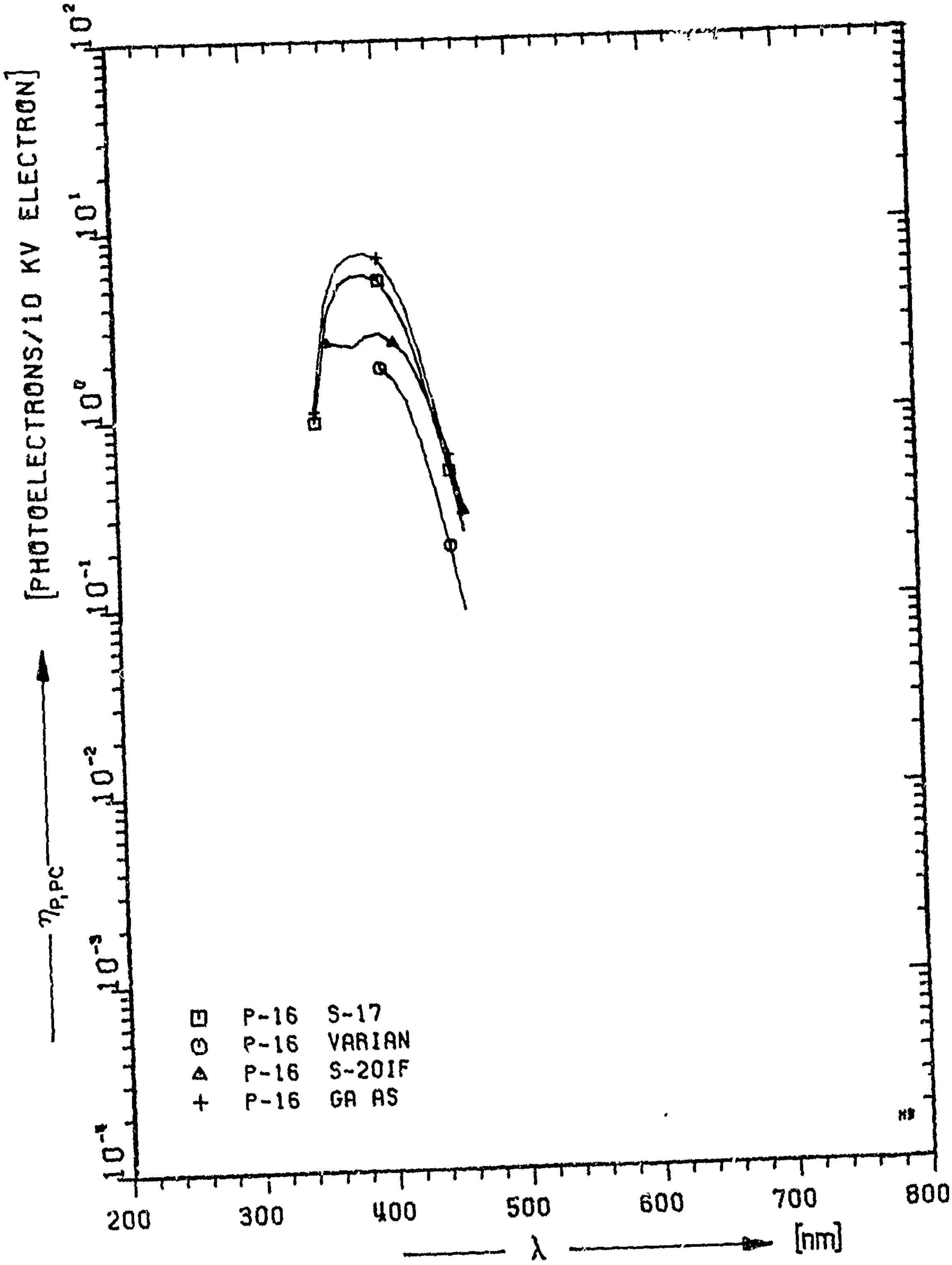


FIG.16D. SPECTRAL RESPONSE, $\eta_{P,PC}$, OF PHOSPHOR SCREEN - PHOTOCATHODE COMBINATIONS.

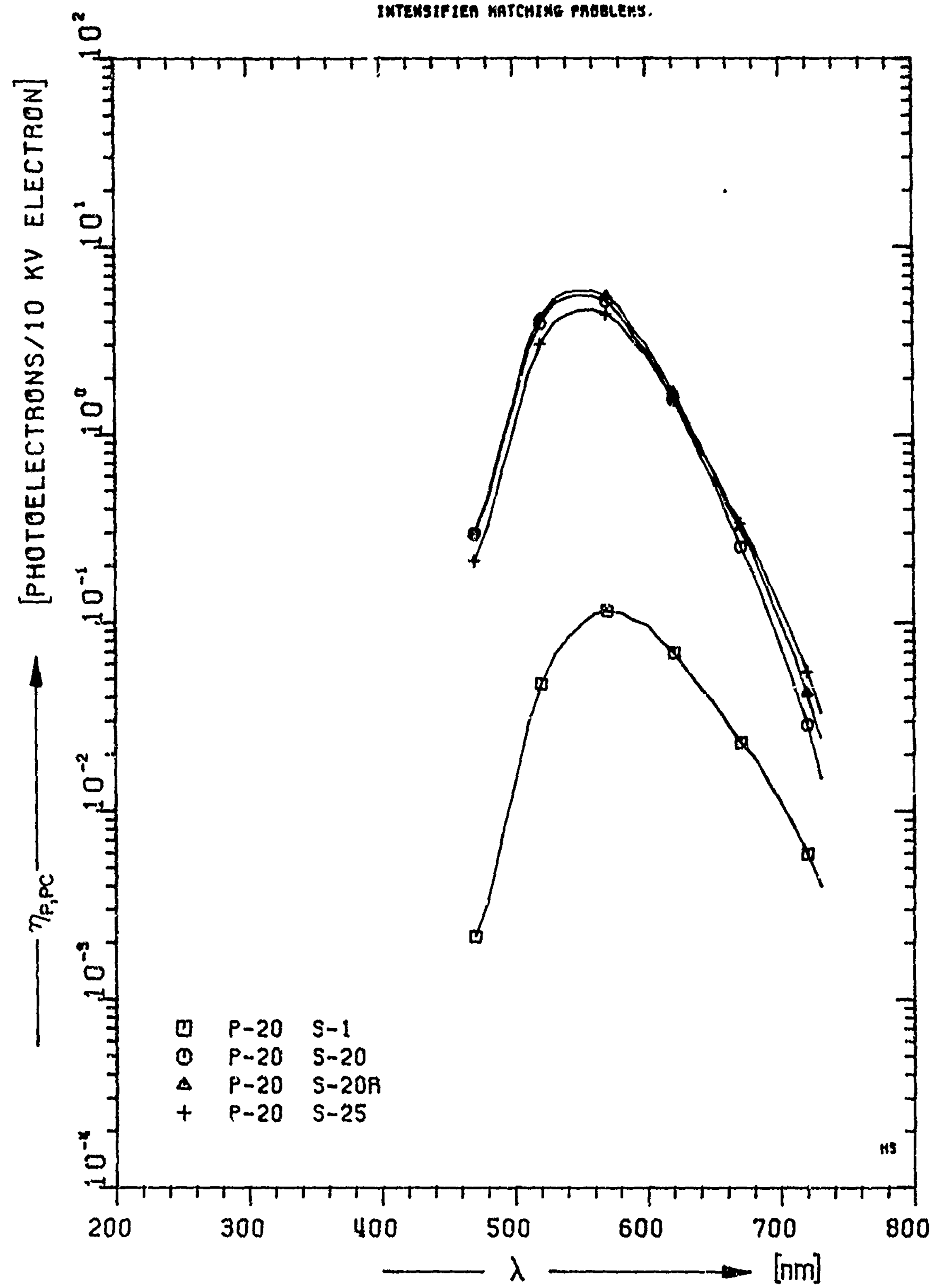


FIG.17A. SPECTRAL RESPONSE, $\eta_{P,PC}$, OF PHOSPHOR SCREEN - PHOTOCATHODE COMBINATIONS.

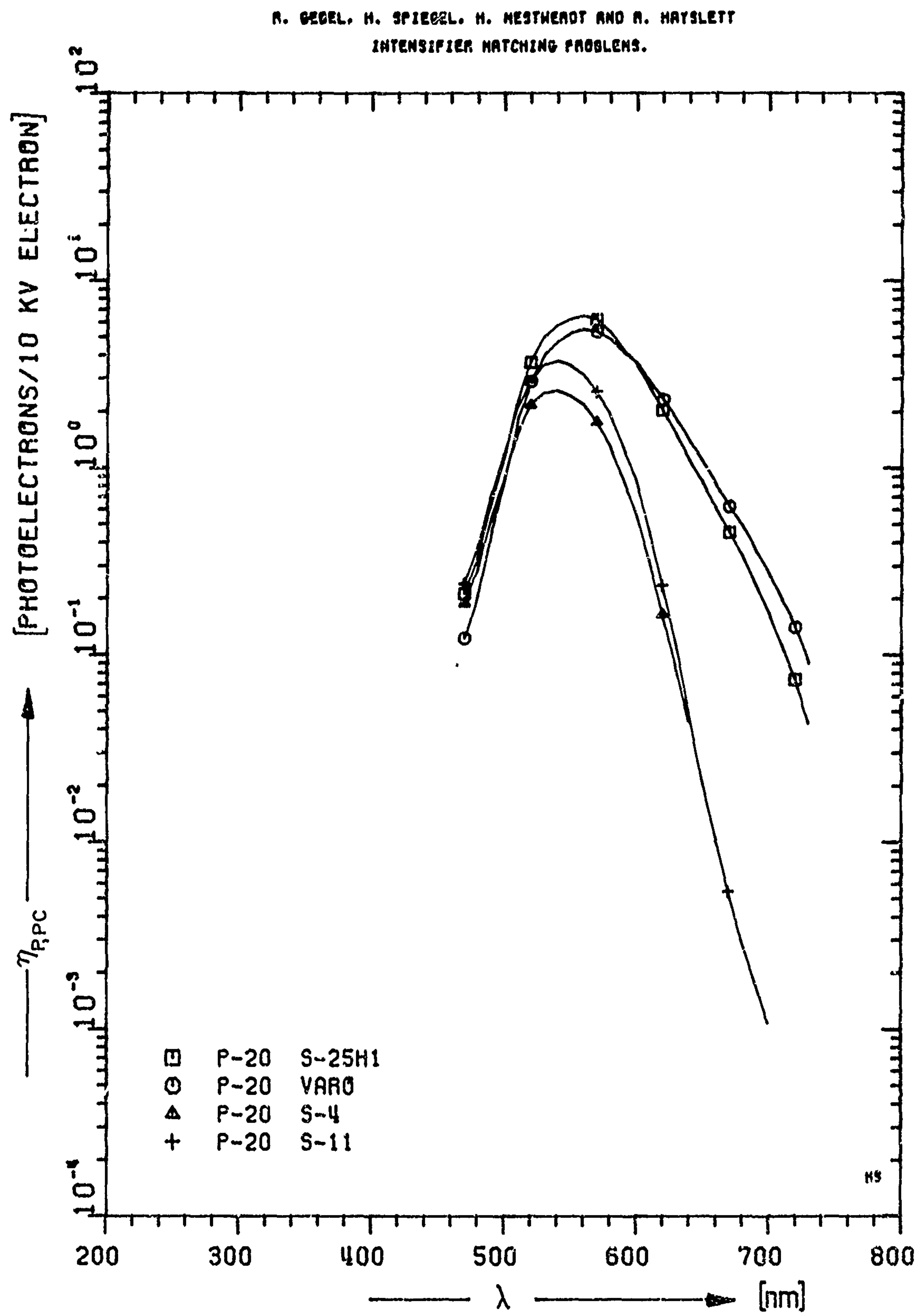


FIG.17B. SPECTRAL RESPONSE, $\eta_{P,PC}$, OF PHOSPHOR SCREEN-PHOTOCATHODE COMBINATIONS.

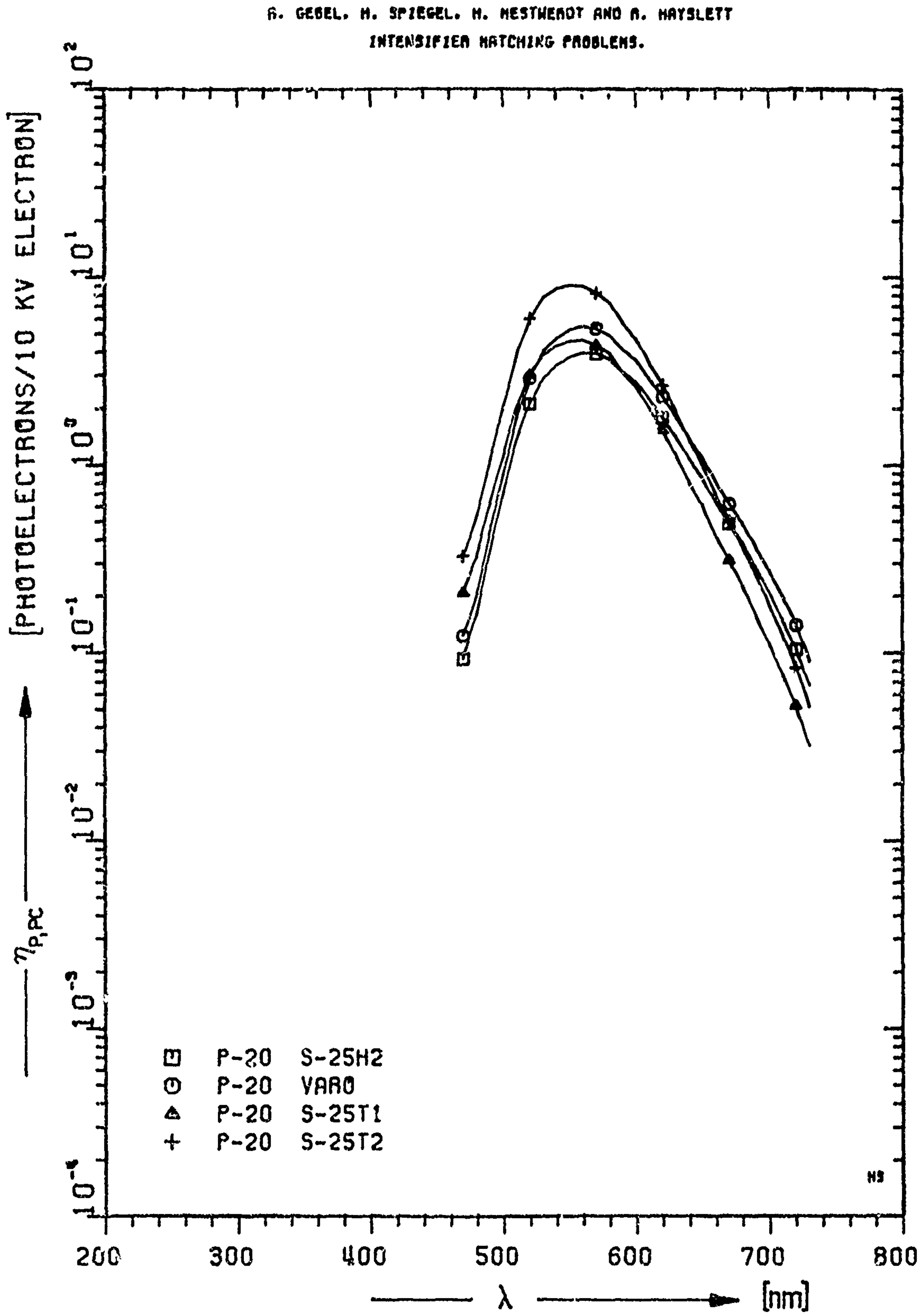


FIG.17C. SPECTRAL RESPONSE, $\eta_{P,PC}$, OF PHOSPHOR SCREEN - PHOTOCATHODE COMBINATIONS.

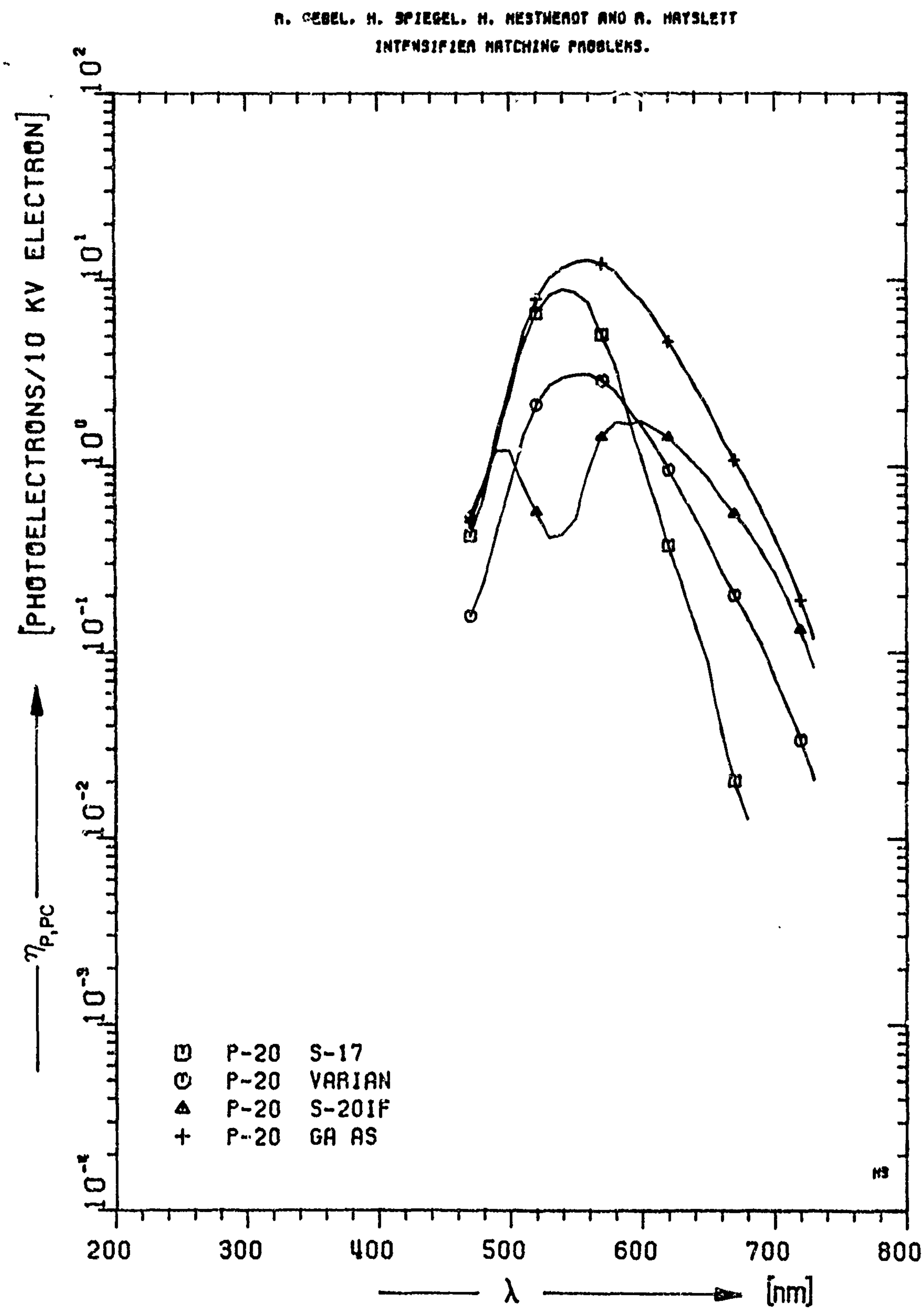


FIG. 17D. SPECTRAL RESPONSE, $\eta_{P,PC}$, OF PHOSPHOR SCREEN - PHOTOCATHODE COMBINATIONS.

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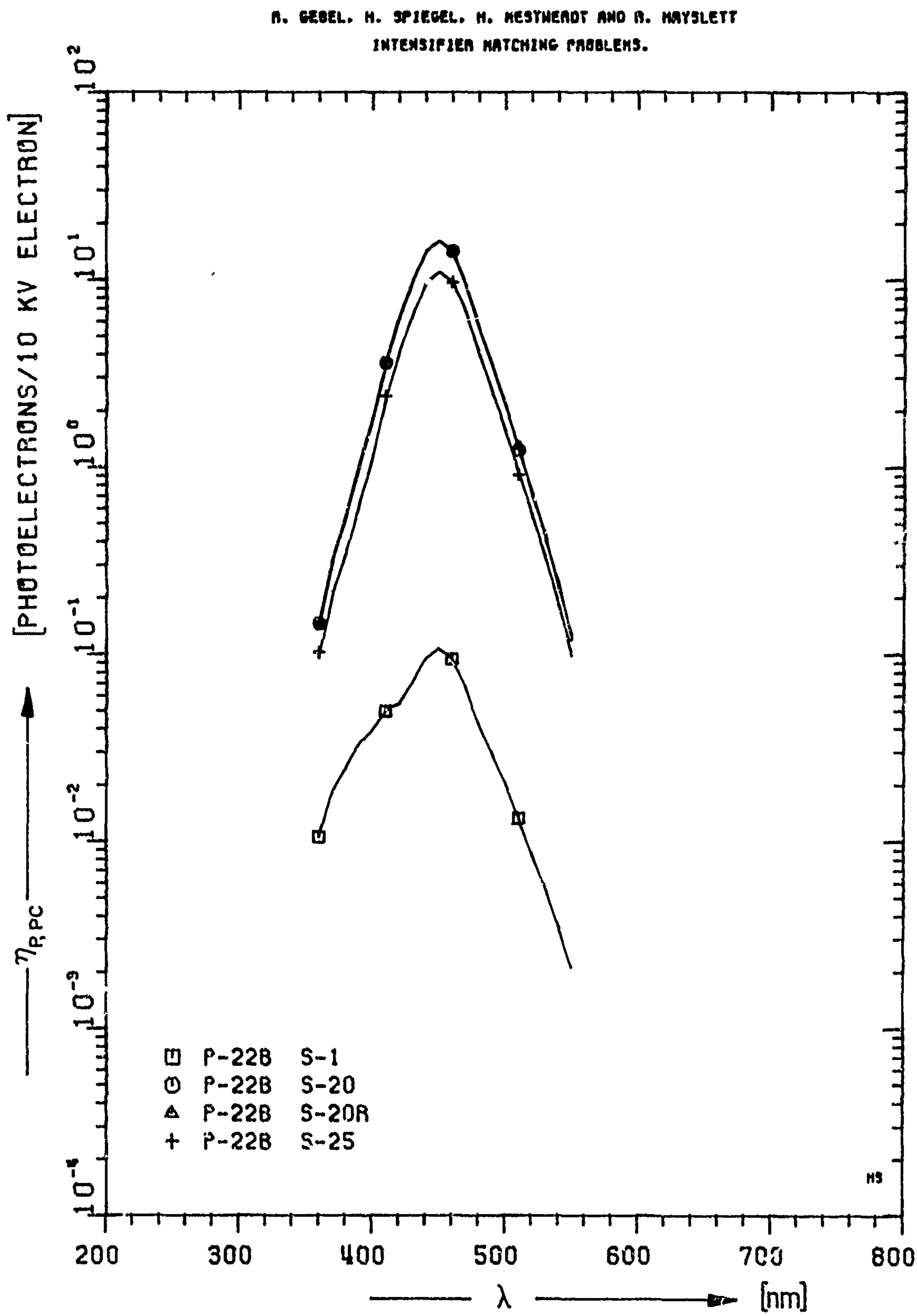


FIG.18A. SPECTRAL RESPONSE, $\eta_{P,PC}$, OF PHOSPHOR SCREEN-PHOTOCATHODE COMBINATIONS.

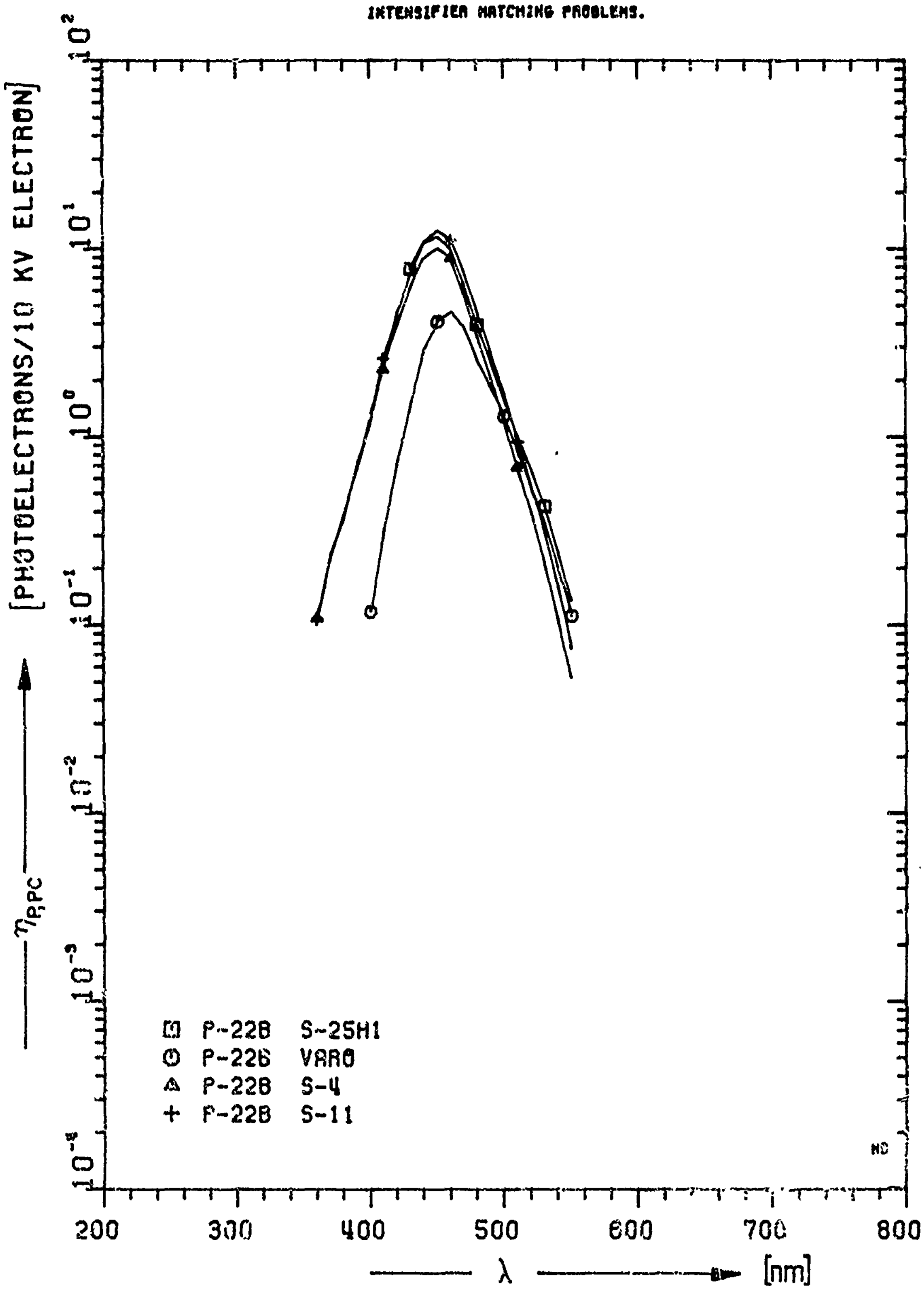


FIG.18B. SPECTRAL RESPONSE, $\eta_{P,PC}$, OF PHOSPHOR SCREEN - PHOTOCATHODE COMBINATIONS.

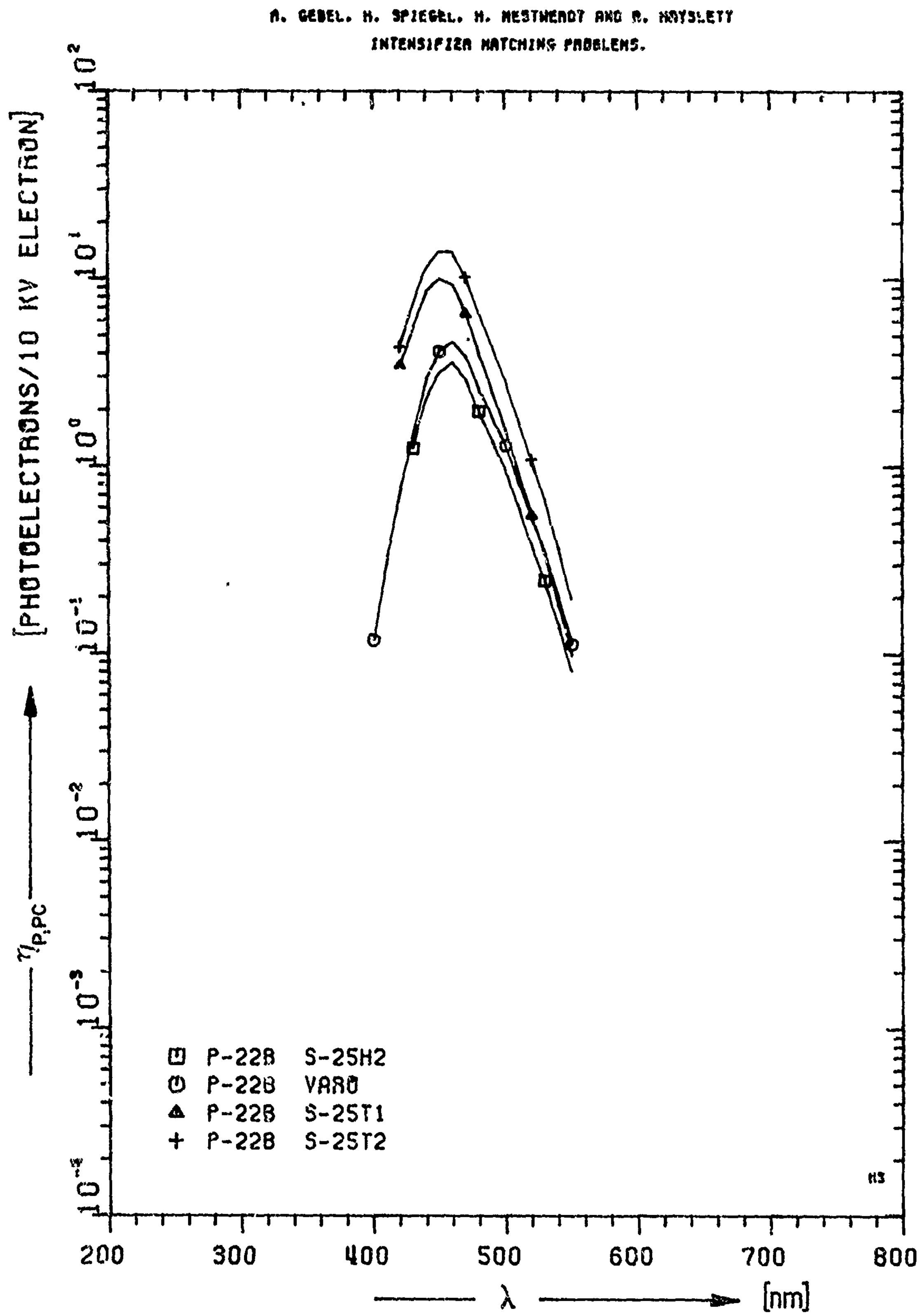


FIG.18C. SPECTRAL RESPONSE, $\eta_{P,PC}$, OF PHOSPHOR SCREEN - PHOTOCATHODE COMBINATIONS.

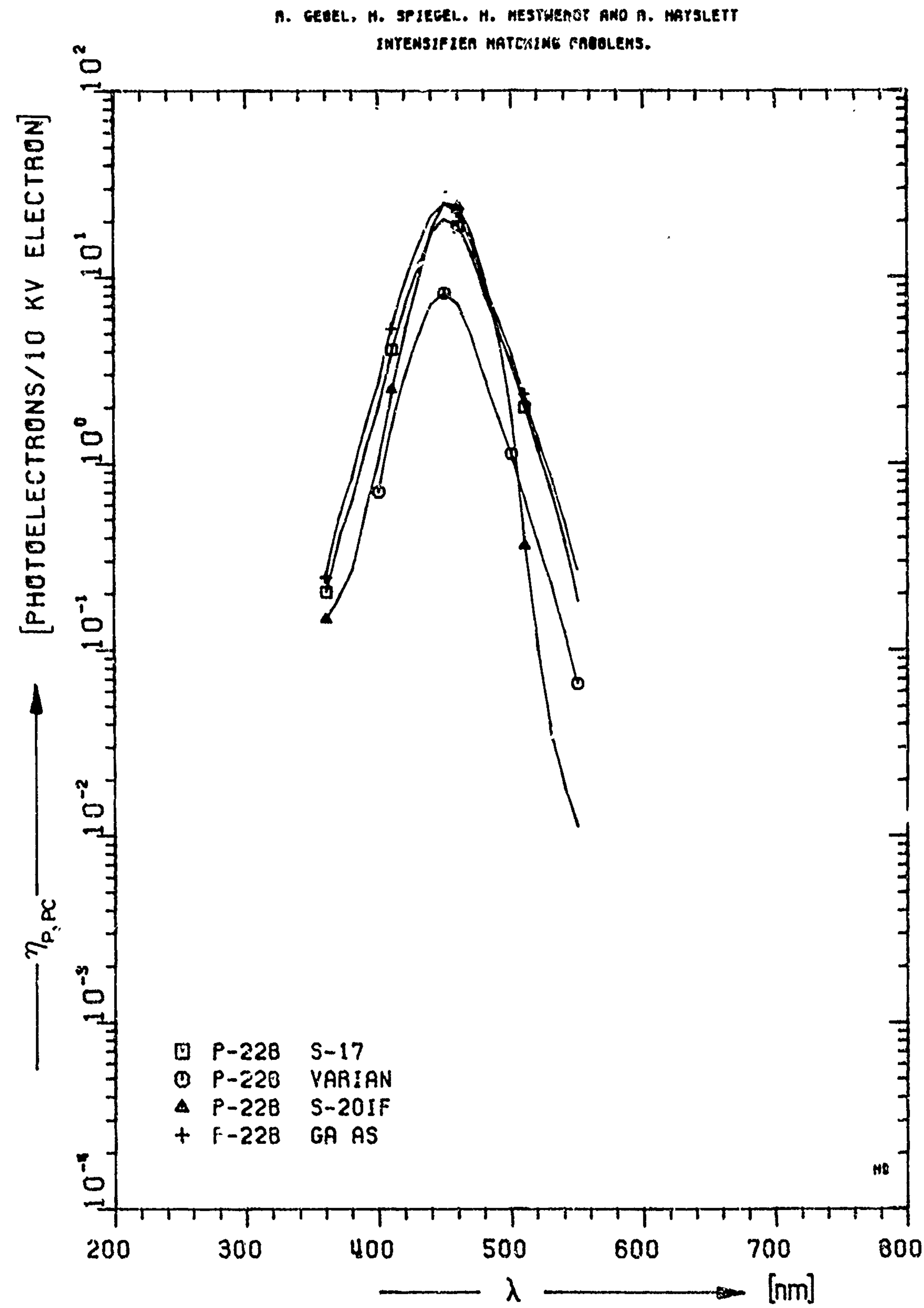


FIG.18D. SPECTRAL RESPONSE, $\eta_{P,PC}$, OF PHOSPHOR SCREEN-PHOTOCATHODE COMBINATIONS.

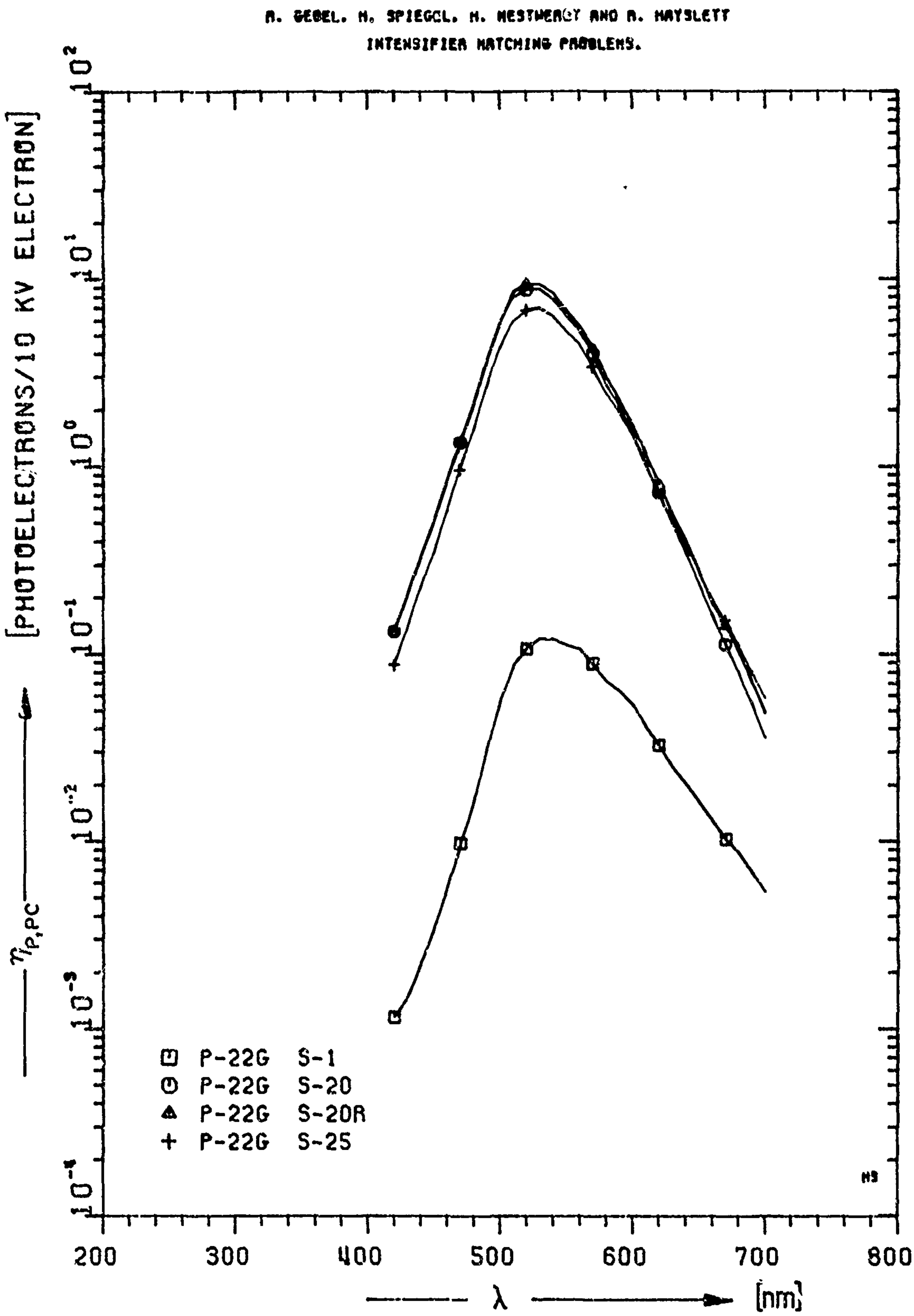


FIG.19A. SPECTRAL RESPONSE, $\eta_{P,PC}$, OF PHOSPHOR SCREEN - PHOTOCATHODE COMBINATIONS.

A. GEBEL, H. SPIEGEL, H. WESTHEADT AND A. HAYSLETT
INTENSIFIER MATCHING PROBLEMS.

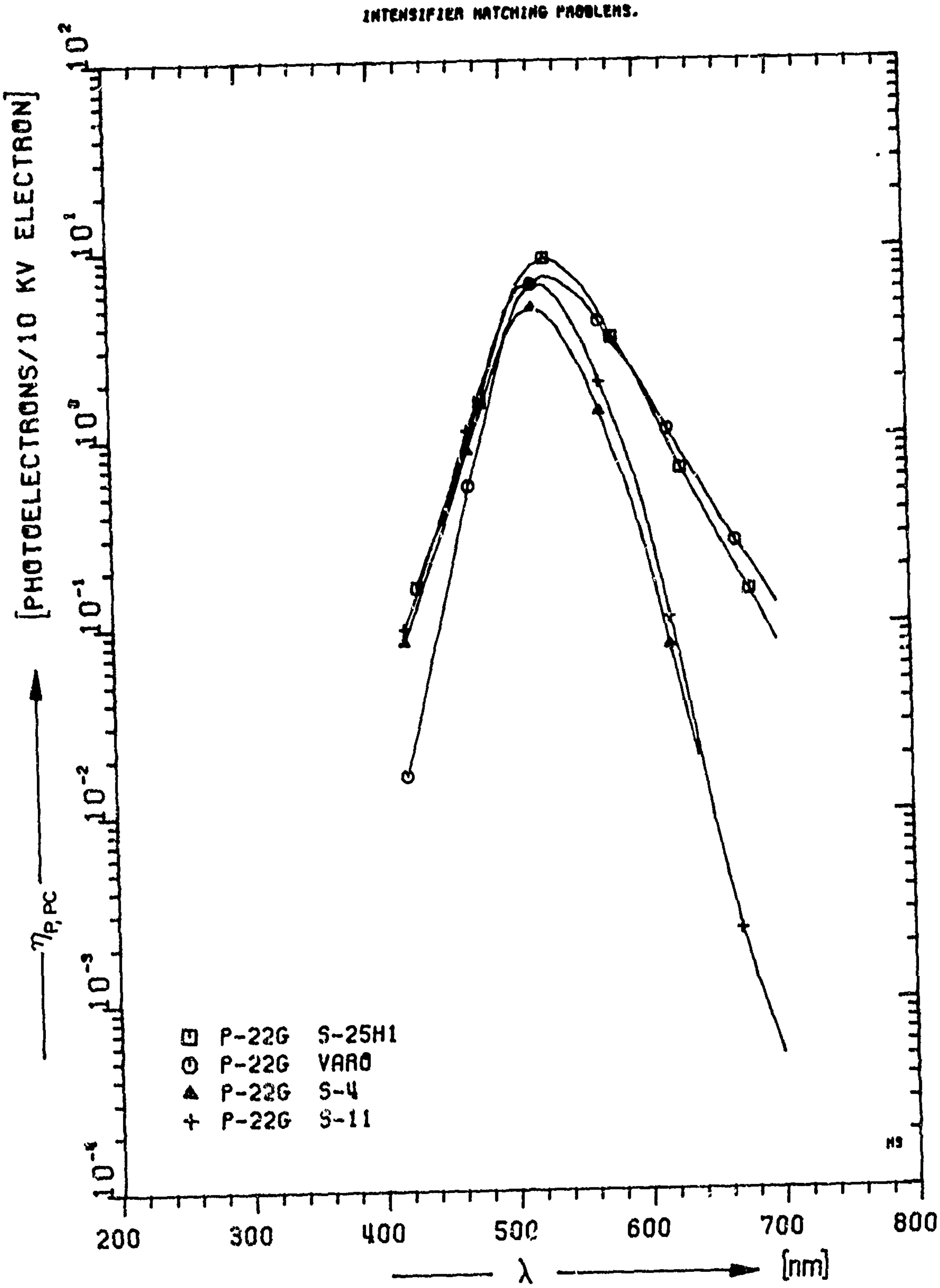


FIG.19B. SPECTRAL RESPONSE, $\eta_{P,PC}$, OF PHOSPHOR SCREEN-PHOTOCATHODE COMBINATIONS.

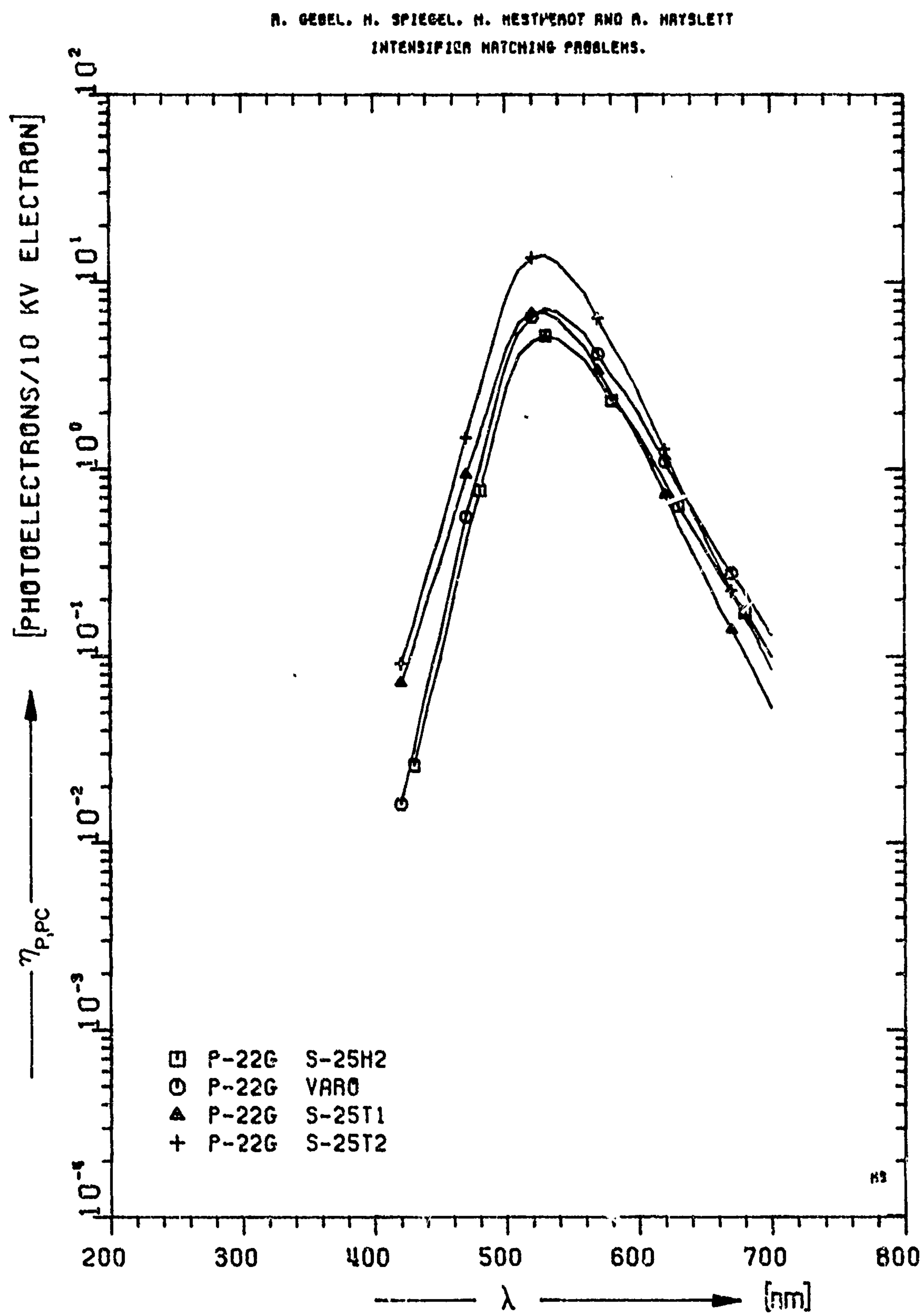


FIG.19C. SPECTRAL RESPONSE, $\eta_{P,PC}$, OF PHOSPHOR SCREEN-PHOTOCATHODE COMBINATIONS.

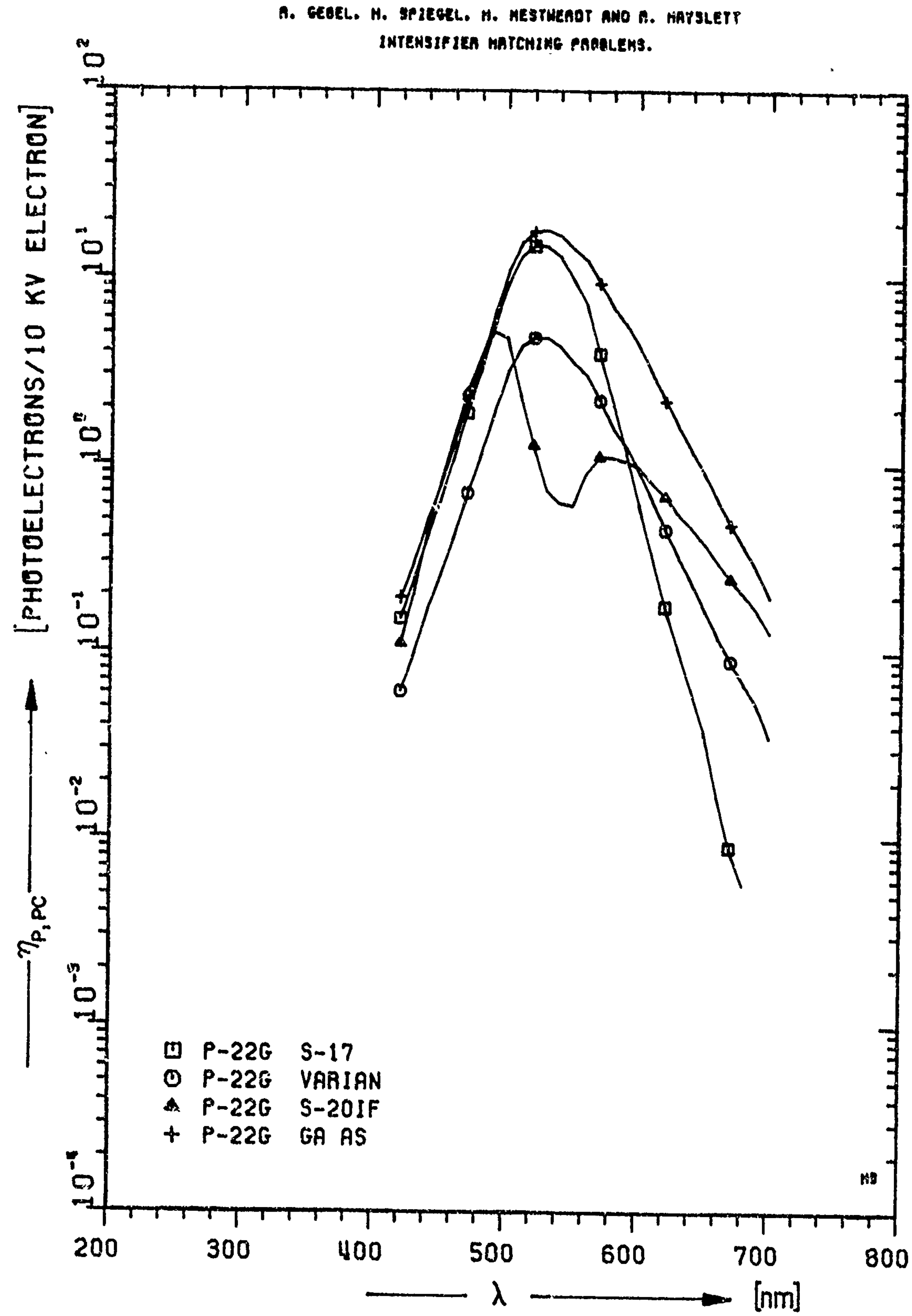


FIG.19D. SPECTRAL RESPONSE, $\eta_{P,PC}$, OF PHOSPHOR SCREEN-PHOTOCATHODE COMBINATIONS.

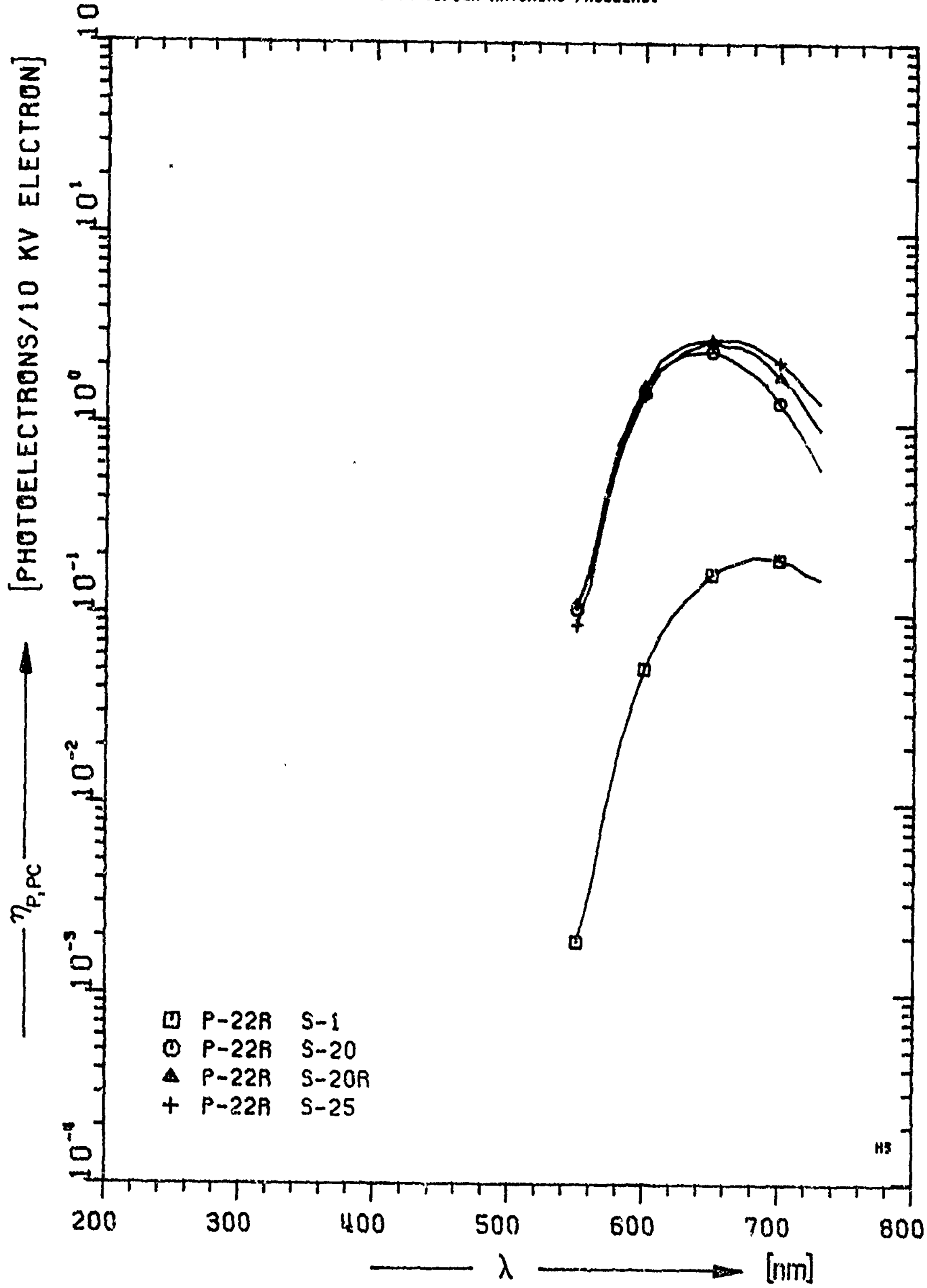


FIG.20A. SPECTRAL RESPONSE, $\eta_{P,PC}$, OF PHOSPHOR SCREEN - PHOTOCATHODE COMBINATIONS.

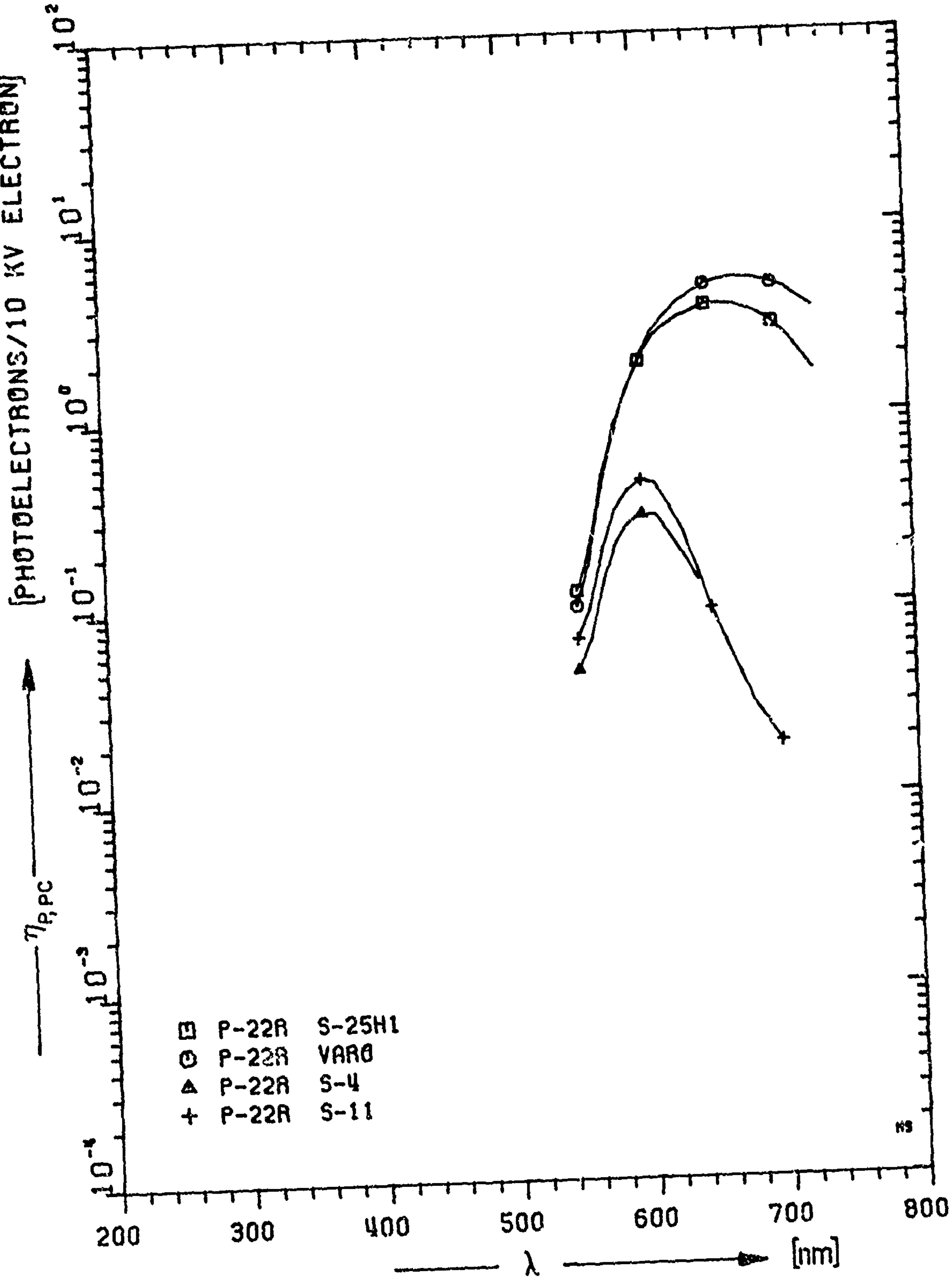


FIG.20B. SPECTRAL RESPONSE, $\eta_{P,PC}$, OF PHOSPHOR SCREEN - PHOTOCATHODE COMBINATIONS.

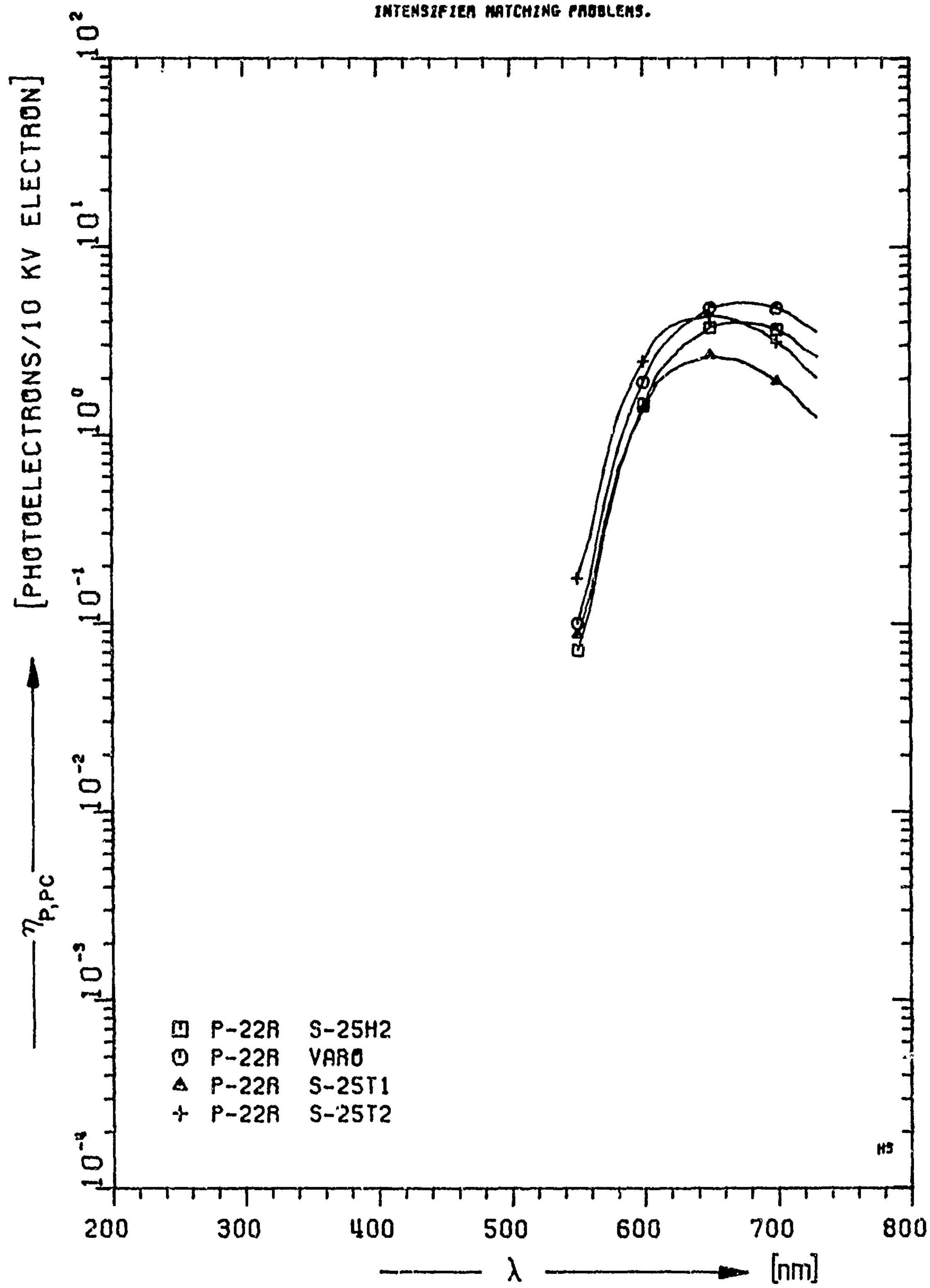


FIG.20C.SPECTRAL RESPONSE, $\eta_{P,PC}$, OF PHOSPHOR SCREEN- PHOTOCATHODE COMBINATIONS.

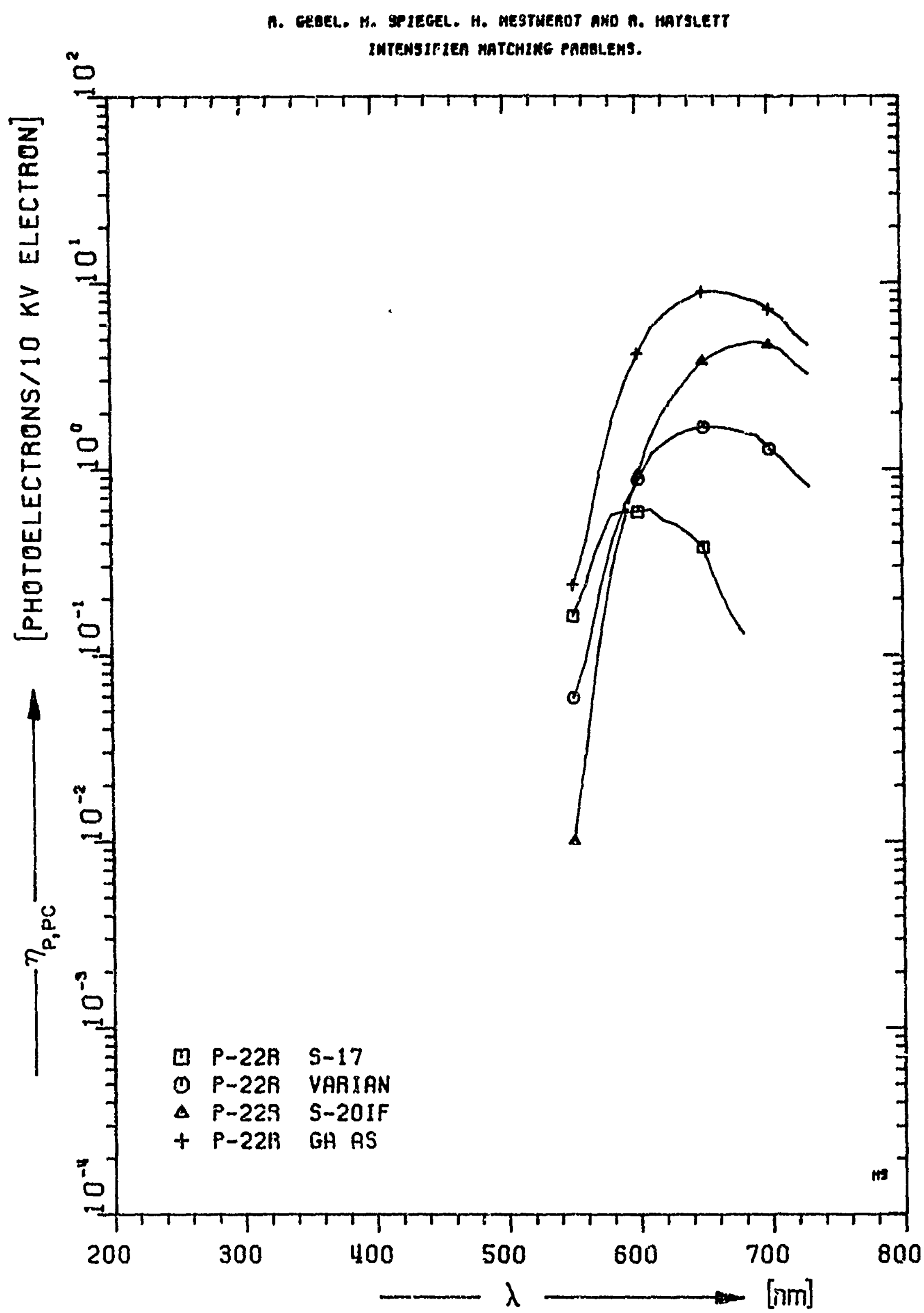


FIG.20D.SPECTRAL RESPONSE, $\eta_{P,PC}$, OF PHOSPHOR SCREEN - PHOTOCATHODE COMBINATIONS.

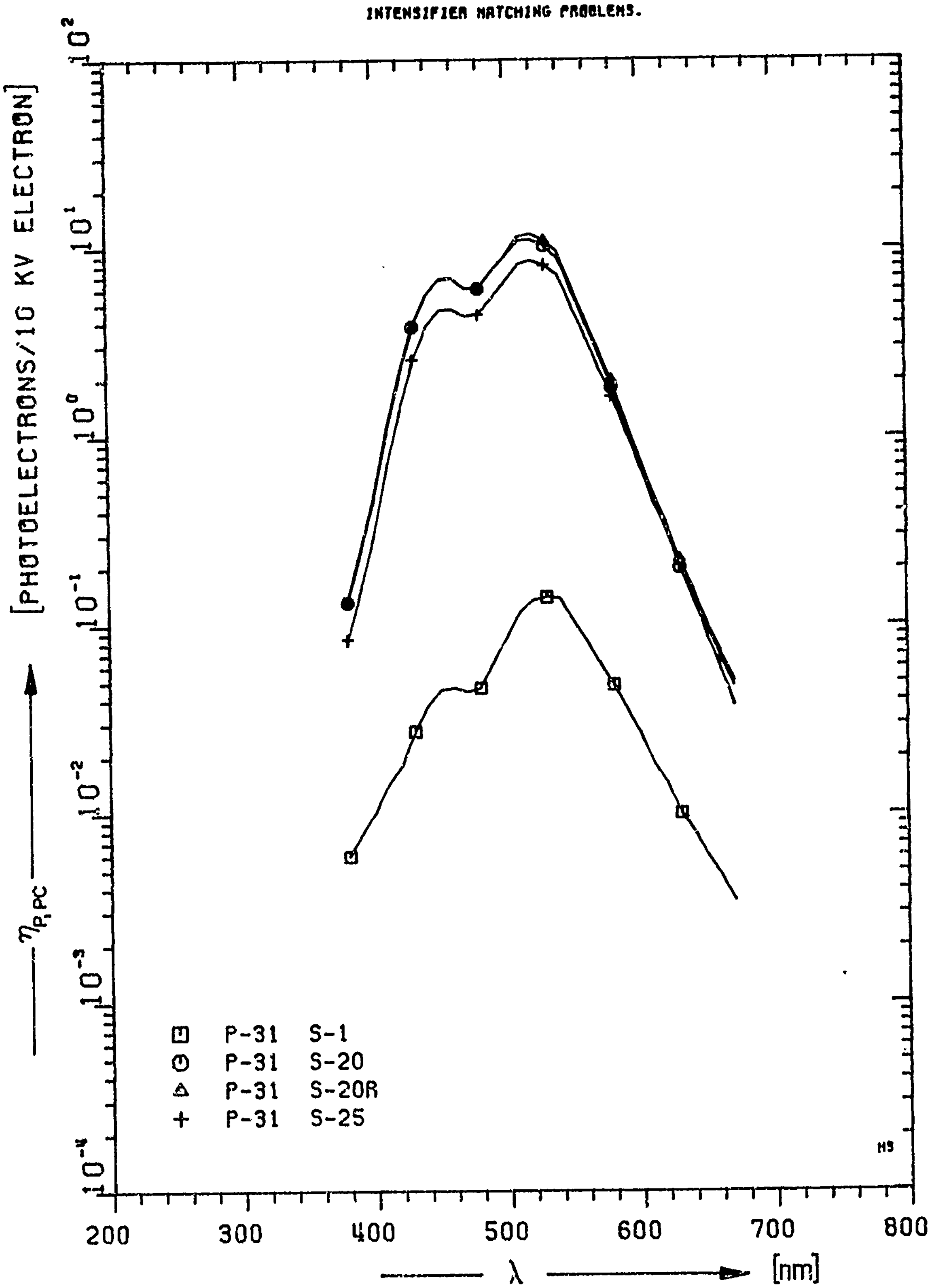


FIG.21A. SPECTRAL RESPONSE, $\eta_{P,PC}$, OF PHOSPHOR SCREEN-PHOTOCATHODE COMBINATIONS.

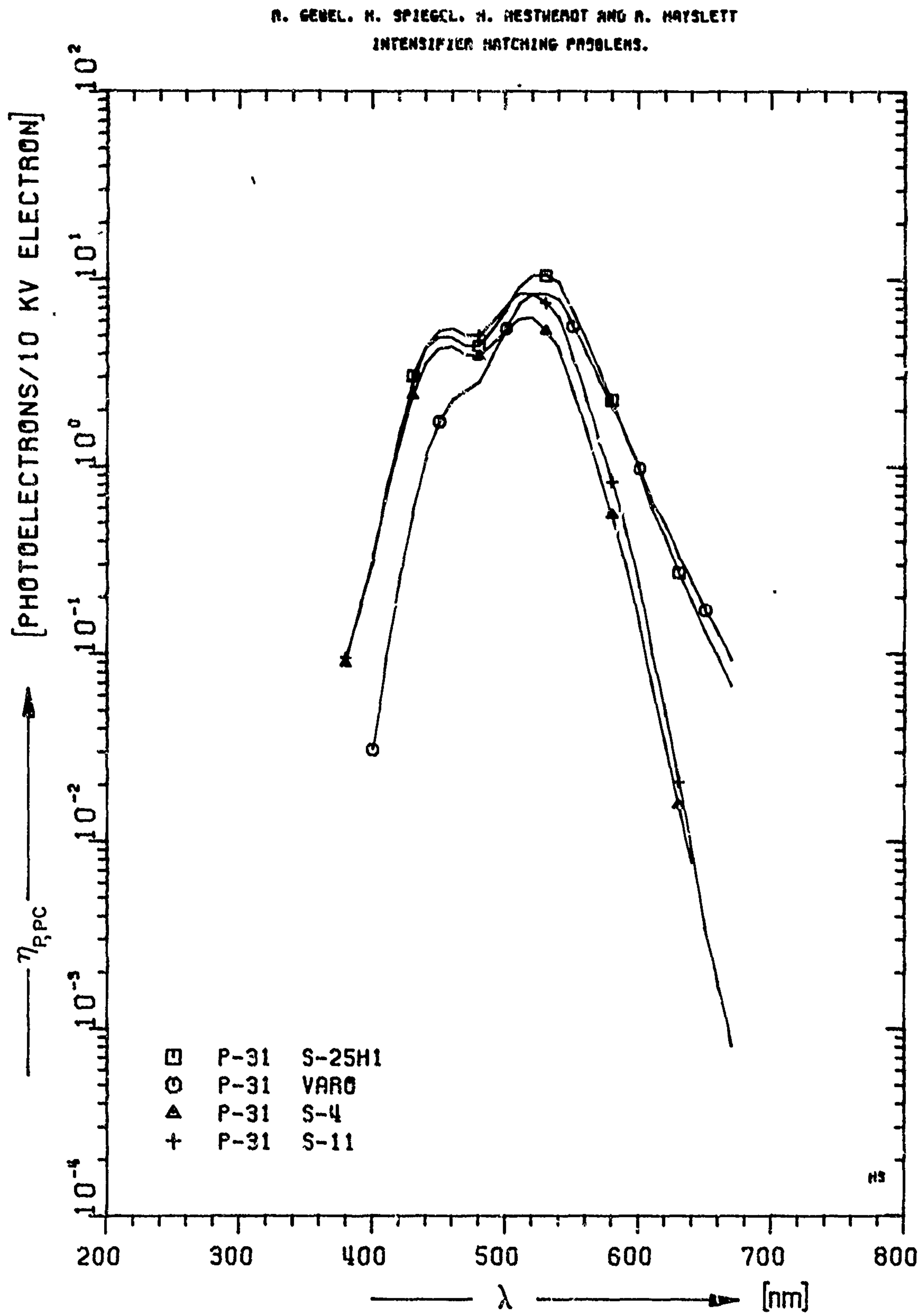


FIG.21B. SPECTRAL RESPONSE, $\eta_{P,PC}$, OF PHOSPHOR SCREEN-PHOTOCATHODE COMBINATIONS.

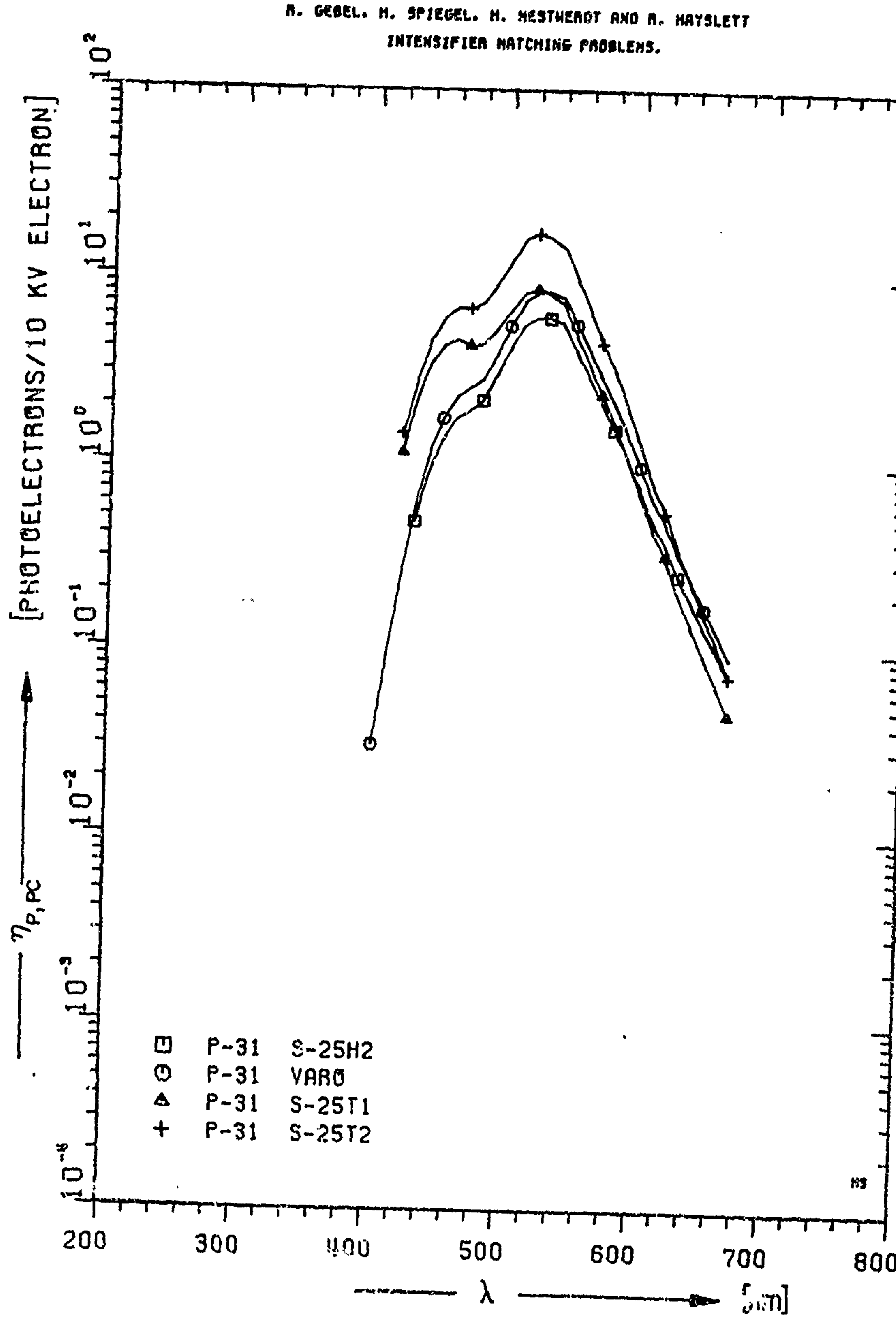


FIG.21C. SPECTRAL RESPONSE, $\eta_{P,PC}$, OF PHOSPHOR SCREEN-PHOTOCATHODE COMBINATIONS.

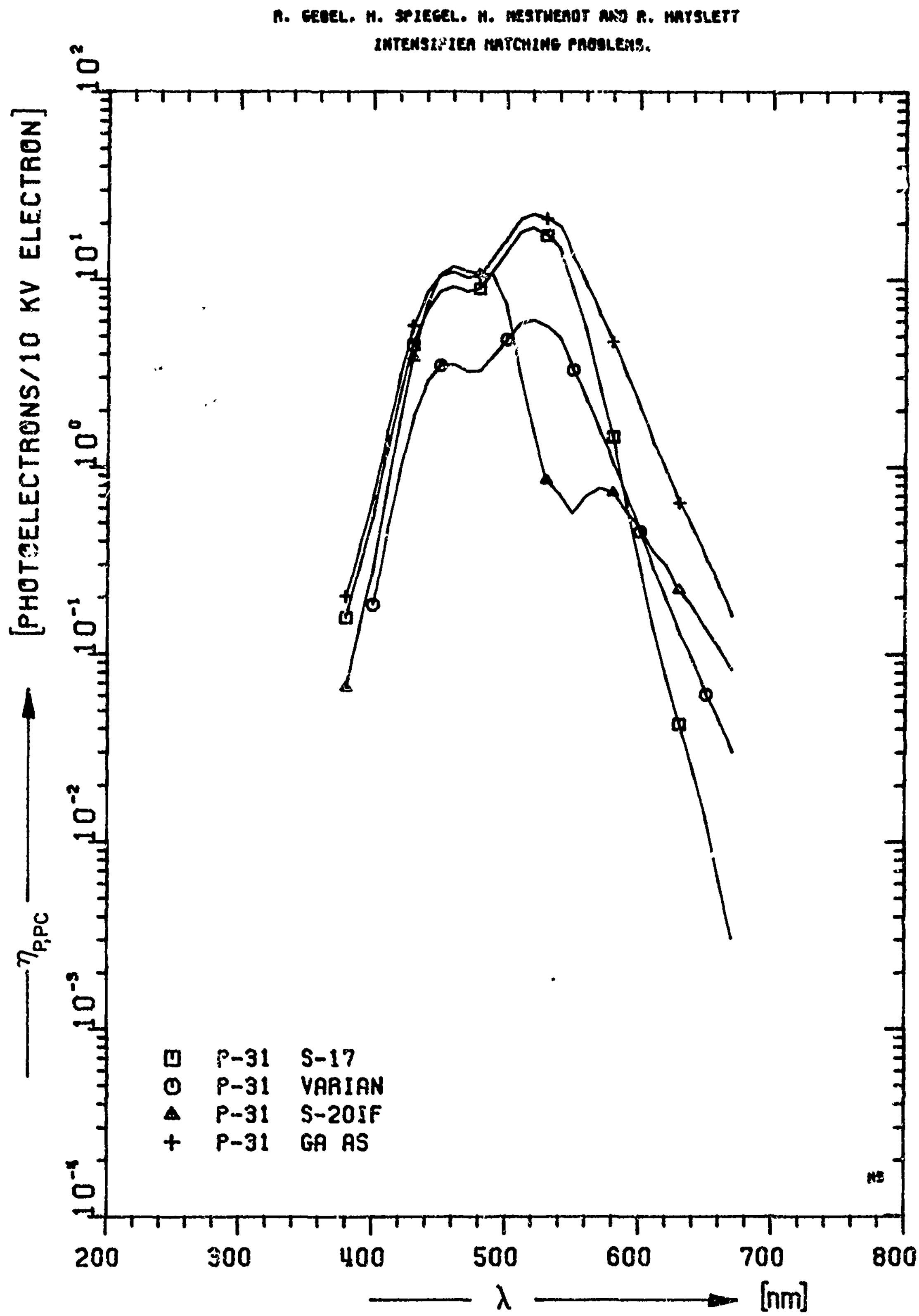
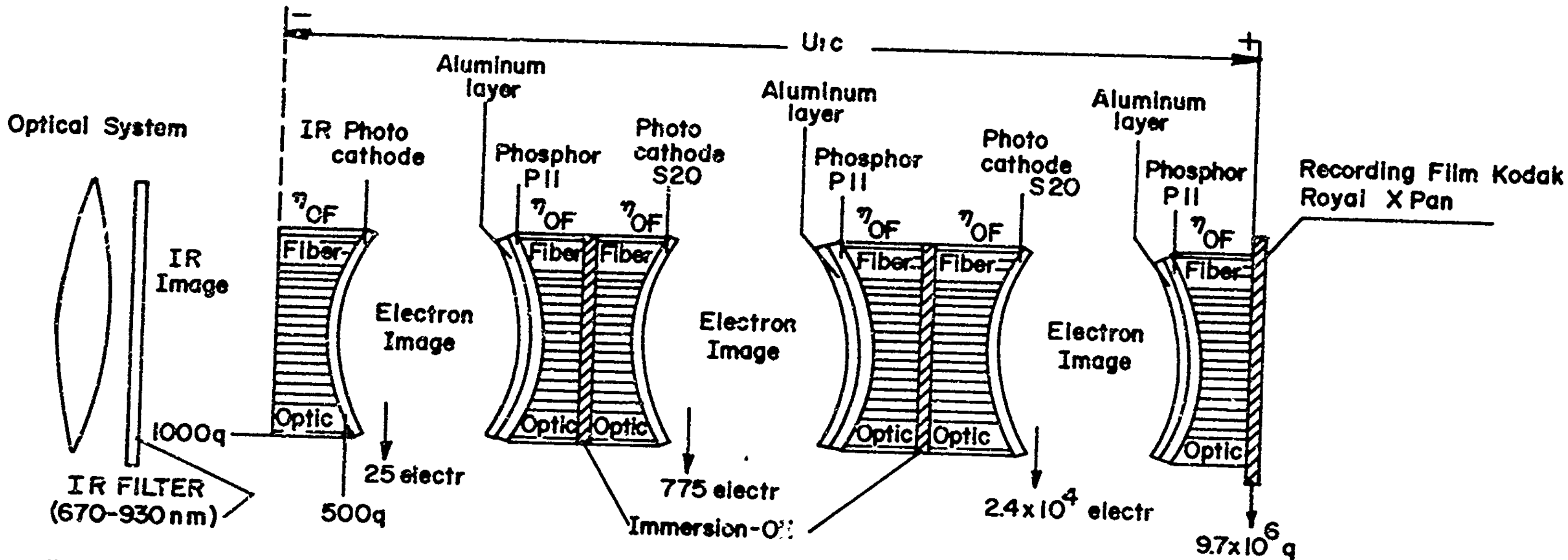


FIG.21D. SPECTRAL RESPONSE, $\eta_{P,PC}$, OF PHOSPHOR SCREEN - PHOTOCATHODE COMBINATIONS.



η_{P11} = 808 quanta electron^{-1}
η_{OF} = 0.5
q = quanta
U_{IC} = 30 kV
$\eta_{IR,T}$ = 5 %
$\eta_{5424,T}$ = 0.024 %

Intensifier Film Combination
6 grains per quantum
Kodak 5424 IR Film direct:
0.0002 grains per quantum

FIG. 22 BASIC CONFIGURATION OF AN IMAGE CONVERTER CASCADE

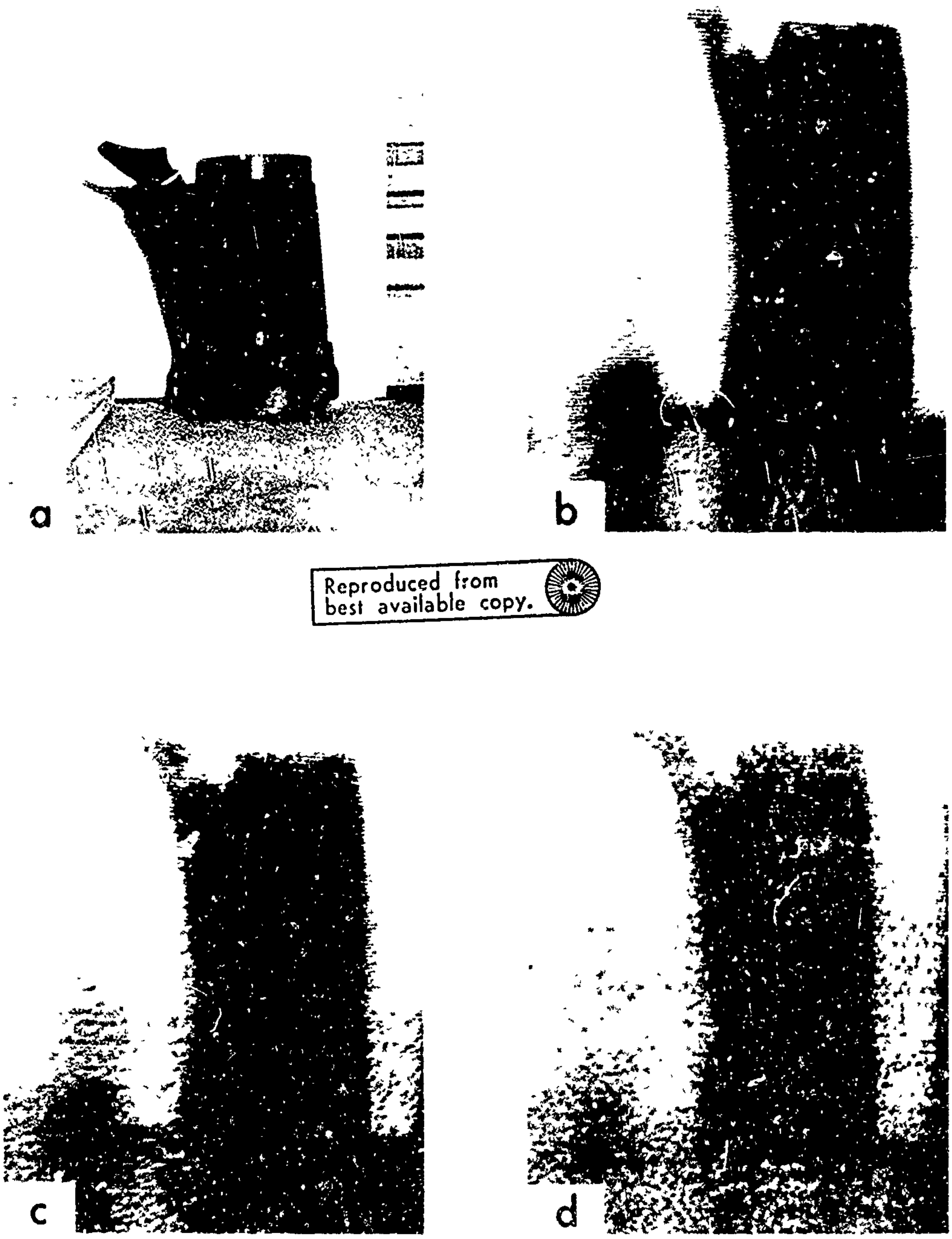


FIG.23. STATISTICAL FLUCTUATIONS SHOWING UP IN PICTURES (b to d) TAKEN OF (a) WITH A SEQUENTIAL LIGHT-AMPLIFIER, OCCURRING WHEN THE NUMBER OF PRIMARY PHOTOELECTRONS IS REDUCED.

APPENDIX

A. Appendix

1. Programs used in this paper

Since one may expect that better photocathodes, phosphors and films or at least those with different spectral characteristics may be marketed in the future, the program by which the tables etc. of this paper were calculated is given so that readers with computer facilities can add other tables to this paper for assessing pertinent materials.

This program was written for an IBM 7044-7094 Direct Couple System Computer and used about 31000 memory places including the executor. Results were printed directly on paper (SYSOU1) and stored on magnetic tape. The program has four main parts. The first, (ending with statement 115, in program DRIVER) reprints data to be used in a tabulated format. Statement 319 concludes the second part in which intrinsic efficiency values are calculated and tabulated. In part three, ending with statement 2010, the previously calculated intrinsic values are normalized. The last part calculates combinations between the intrinsic results of phosphor-film and phosphor-photocathodes.

Data to be read into the computer may have a format as determined in subprogram LOAD statement 101. The value has to be within the first fourteen columns with a maximum of seven digits behind the decimal point. As can be seen from the tables the starting point of the wavelength is 250×10^{-9}m. This number is increased by 10×10^{-9}m

with each step. As the data of films, photocathodes, and phosphors used in this paper do not always start in correlation with number 250, it has to be indicated to the computer to what wavelength value the first data-value belongs. In this program, a card with a two digit number in column 1 and 2 has to be placed in front of each single data deck. This number has to indicate to the computer to what wavelength the first nonzero data-value correlates. The correct number is found by calculating the difference between the wavelength the first data-value starts with, and the wavelength 250. The result has to be divided by 10. To this number, one has to be added. If for example the first nonzero-value appears at a wavelength of 330 nm, the difference to be found is 80. After division by 10 and adding 1, the right number to be placed in front of this data deck would be 09. If there is no nonzero data-value, the first card on such a data deck must obviously have the number 01.
The limits for the used data must not exceed the following DIMENSIONS. For film data, the maximum number of values in a column is 50. Data of four films are allowed. For the phosphor data, the numbers are 50 and 8, and for photocathode data 85 and 12. Indications in this program are for film (F), for phosphor (P), and for photocathode (Z). The end of one data deck of one column has to be indicated by a blank card. New names or indications of data have to be inserted for the old ones at the same place. The number of letters or digits of these names must not exceed six.

The program which generated the instructions for the plotter was developed from the program used for the tables. The main difference between these two programs is that in the first, mean values were calculated, whereas in the latter pivot points were calculated and plotted.

A change of data-values in this program has to be done in the same way as in the previous program. More difficulties would arise if the DATA-statement of this program has to be changed, because the DIMENSION-statement and some arguments in subprograms have to be changed. For these reasons, new names and indications should be placed in the same location without changing the number of letters or symbols.

For this plotting program several subprograms were used which were in the system-library of the computer. In addition to these, subprograms from the CALCOMP Comp., Anaheim, Cal. were used. For more information about these programs this company should be contacted.

In the following sections the programs and their flow charts are listed.

2. PROGRAM FOR TABLES

```
$IBFTC DRIVER
      DIMENSION XL(85) ,P(85,12),F(85,12),Z(85,12),T(12),RS(85,1),EQ(85,
     *1),EE(85,1),EQ1(85),FA(85,12),B(4),ETA(85,4),AP(8),BP(4),CP(12),
     *ETAE(85,8),ETAQ(85,8),SUMP(8),SUMET(8),SUMQ(8),PA(85,12),ZA(85,12)
     *,ETAZ(85,12),SUMEZ(12),SUMSTE(12),KCHECK(12),SUMSAZ(12)
     *,ETARZ(85,12),PP(12),IEN(12),IST(12),SUMAZ(12),SPF(32),PPP(49,96)
     *,XMAX(4),XMAXE(8),XMAXQ(8),XMAXZ(12),XN(85,12),XNE(85,12),XNQ(85,
     *12),XNZ(85,12),SPP(96),DP(8)
      DATA AP,BP,CP,DP /3HP-4,4HP-11,4HP-16,4HP-20,5HP-22B,5HP-22G,5HP-2
     *2R,4HP-31,6HRX-0.3,6HRX-1.0,6HTX-0.3,6HTX-1.0,3HS-1,4HS-20,5HS-20R
     *,4HS-25,6HS-25H1,4HVARO,3HS-4,4HS-11,4HS-17,6HVARIAN,6HS-20IF,5HGA
     * AS,5H  P-4,5H P-11,5H P-16,5H P-20,5HP-22B,5HP-22G,5HP-22R,5H P-3
     *1/
      WRITE(6,115)
      WRITE(7,115)
      K=0
C     DSQ=GRAINSIZEDIAMETER
      DSQ=2.2
      DO 1  J=250,1090,10
      K=K+1
C     XL=WAVELENGTH
1     XL(K)=J
C     READ CARDS
C     F=FILMVALUES
      CALL LOAD(50,4,F)
C     P=PHOSPHORVALUES
      CALL LOAD(50,8,P)
C     Z=PHOTOCATODEVALUES
      CALL LOAD(85,12,Z)
C     PRINTING OF DATA RESD IN
      WRITE (7,104 )
10    WRITE (6,104 )
C     PRINT HEADING
104   FORMAT (38X7HTABLE 1)
      WRITE (6,105 )
      WRITE (7,105 )
105   FORMAT (1H )
      WRITE (6,106 ) (BP(J),J=1,4)
      WRITE (7,106 ) (BP(J),J=1,4)
106   FORMAT(10X6HLAMBDA4X1A6,3(9X1A6))
      WRITE (6,105 )
      WRITE (7,105 )
C     PRINT FILMDATA
      DO 11  J=1,50
      M=XL(J)
      DO 2000  I=1,4
2000  T(I)=F(J,I)*10.
      WRITE (7,107 )M,(T(I), I=1,4)
11    WRITE (6,107 )M,(T(I), I=1,4)
107   FORMAT (10XI5,4XF7.4,3(8XF7.4))
      WRITE (6,115 )
      WRITE (7,115 )
      WRITE (6,108 )
C     PRINT HEADING
      WRITE (7,108 )
108   FORMAT(38X7HTABLE 2)
1081  FORMAT(38X7HTABLE 3)
      WRITE (6,105 )
      WRITE (7,105 )
      WRITE (6,109 ) (AP(J),J=1,8)
      WRITE (7,109 ) (AP(J),J=1,8)
109   FORMAT(10X6HLAMBDA,8(2X1A6))
```

```
 1091  FORMAT(10X6HLAMBDA,3X1A6,5(4X1A6))
       WRITE (6,105 )
       WRITE (7,105 )
C      PRINT PHOSPHORDATA
       DO 121 J=1,50
       M=XL(J)
       DO 2001 I=1,8
 2001  T(I)=P(J,I)*1000.
       WRITE (7,110 )M,(T(I),I=1,8)
 121   WRITE (6,110 )M,(T(I),I=1,8)
       WRITE (6,115 )
       WRITE (7,115 )
 110   FORMAT (10XI5,3XF6.3,7(2XF6.3))
C      PRINT HEADING
       WRITE (6,1081)
       WRITE (7,1081)
       WRITE (6,105 )
       WRITE (7,105 )
       WRITE (6,1091) (CP(J),J=1,6)
       WRITE (7,1091) (CP(J),J=1,6)
       WRITE (6,105 )
       WRITE (7,105 )
C      PRINT PHOTOCATHODEVALUES
       DO 200 I=1,50
       M=XL(I)
       DO  2002 J=1,6
 2002  T(J)=Z(I,J)*10.
       WRITE (7,9900)M,(T(K),K=1,6)
 200   WRITE (6,9900)M,(T(K),K=1,6)
       WRITE (6,115 )
       WRITE (7,115 )
       WRITE (6,1082)
       WRITE (7,1082)
       WRITE (6,105 )
       WRITE (7,105 )
       WRITE (6,1091) (CP(J),J=1,6)
       WRITE (7,1091) (CP(J),J=1,6)
       WRITE (6,105 )
       WRITE (7,105 )
       DO 1500 I=50,85
       M=XL(I)
       DO 2003  J=1,6
 2003  T(J)=Z(I,J)*10.
       WRITE (7,9900)M,(T(K),K=1,6)
 1500  WRITE (6,9900)M,(T(K),K=1,6)
       WRITE (6,115 )
       WRITE (7,115 )
       WRITE (6,1083)
       WRITE (7,1083)
       WRITE (6,105 )
       WRITE (7,105 )
       WRITE (6,1091) (CP(J),J=7,12)
       WRITE (7,1091) (CP(J),J=7,12)
       WRITE (6,105 )
       WRITE (7,105 )
       DO 1501 I=1,50
       M=XL(I)
       DO2004 J=7,12
 2004  T(J)=Z(I,J)*10.
       WRITE (7,9900)M,(T(K),K=7,12)
 1501  WRITE (6,9900)M,(T(K),K=7,12)
       WRITE (6,115 )
```

```
      WRITE (7,115 )
      WRITE (6,1084)
      WRITE (7,1084)
      WRITE (6,105 )
      WRITE (7,105 )
      WRITE (6,1091) (CP(J),J=7,12)
      WRITE (7,1091) (CP(J),J=7,12)
      WRITE (6,105 )
      WRITE (7,105 )
      DO 1502 I=50,85
      M=XL(I)
      DO 2005 J=7,12
2005  T(J)=Z(I,J)*10.
      WRITE (7,9900)M,(T(K),K=7,12)
1502  WRITE (6,9900)M,(T(K),K=7,12)
      WRITE (6,115 )
      WRITE (7,115 )
1082  FORMAT (38X8HTABLE 3A)
1083  FORMAT (38X7HTABLE 4)
1084  FORMAT (38X8HTABLE 4A)
9900  FORMAT (9XI5,4XF6.3,5F10.3)
115   FORMAT(1H1)
C     NEW PART
      DO 300 I=1,85
300   RS(I,1)=XL(I)
      CALL ADVAGE (85,1,RS,EQ)
      DO 301 I=1,84
C     EQ-CALCULATING FROM H*C/LAMBDA
      EQ(I,1)=1.986305E-16/EQ(I,1)
C     EE=EQ IN ELECTRON VOLTS
      EE(I,1)=EQ(I,1)/1.6021E-19
301   EQ1(I)=EQ(I,1)*1.0E+19
C     PRINTING OF EQ AND EE
      WRITE(6,800)
      WRITE(7,800)
800   FORMAT(38X7HTABLE 5)
      WRITE(6,105)
      WRITE(7,105)
      WRITE(6,801)
      WRITE(7,801)
801   FORMAT(10X6HLAMBDA7X2HEQ10X2HEE10X6HLAMBDA6X2HEQ10X2HEE)
      WRITE (6,105)
      WRITE (7,105)
      DO 302 I=1,42
      K1=XL(I)
      K2=XL(I+1)
      K3=XL(I+42)
      K4=K3+10
      WRITE(7,802)K1,K2,EQ1(I),EE(I,1),K3,K4,EQ1(I+42),EE(I+42,1)
302   WRITE(6,802)K1,K2,EQ1(I),EE(I,1),K3,K4,EQ1(I+42),EE(I+42,1)
802   FORMAT(10XI3,I4,2(2XF10.7),3XI4,I5,F12.7,F13.7)
C     CALCULATING OF FILMEFFICIENCYVALUES
      CALL ADVAGF(50,4,F,FA)
C     F AV= FILMAVERAGEVALUE
      B(1)=1.0/(10.0**.15)-1.0/(10.0**.45)
      B(2)=1.0/(10.0**.15)-1.0/(10.0**1.15)
      B(3)=1.0/(10.0**.1)-1.0/(10.0**0.4)
      B(4)=1.0/(10.0**.1)-1.0/(10.0**1.1)
      A=4./(3.1415926*DSQ*DSQ)
      DO 8061  I=1,4
      DO 8061  J=1,50
C     ETA=FILMEFFICIENCYVALUE
```

```
      WRITE (7,115 )
      WRITE (6,1084)
      WRITE (7,1084)
      WRITE (6,105 )
      WRITE (7,105 )
      WRITE (6,1091) (CP(J),J=7,12)
      WRITE (7,1091) (CP(J),J=7,12)
      WRITE (6,105 )
      WRITE (7,105 )
      DO 1502 I=50,85
      M=XL(I)
      DO 2005 J=7,12
2005  T(J)=Z(I,J)*10.
      WRITE (7,9900)M,(T(K),K=7,12)
1502  WRITE (6,9900)M,(T(K),K=7,12)
      WRITE (6,115 )
      WRITE (7,115 )
1082  FORMAT (38X8HTABLE 3A)
1083  FORMAT (38X7HTABLE 4)
1084  FORMAT (38X8HTABLE 4A)
9900  FORMAT (9XI5,4XF6.3,5F10.3)
115   FORMAT(1H1)
C     NEW PART
      DO 300 I=1,85
300   RS(I,1)=XL(I)
      CALL ADVAGE (85,1,RS,EQ)
      DO 301 I=1,84
C     EQ-CALCULATING FROM H*C/LAMBDA
      EQ(I,1)=1.986305E-16/EQ(I,1)
C     EE=EQ IN ELECTRON VOLTS
      EE(I,1)=EQ(I,1)/1.6021E-19
301   EQ1(I)=EQ(I,1)*1.0E+19
C     PRINTING OF EQ AND EE
      WRITE(6,800)
      WRITE(7,800)
800   FORMAT(38X7HTABLE 5)
      WRITE(6,105)
      WRITE(7,105)
      WRITE(6,801)
      WRITE(7,801)
801   FORMAT(10X6HLAMBDA7X2HEQ10X2HEE10X6HLAMBDA6X2HEQ10X2HEE)
      WRITE (6,105)
      WRITE (7,105)
      DO 302 I=1,42
      K1=XL(I)
      K2=XL(I+1)
      K3=XL(I+42)
      K4=K3+10
      WRITE(7,802)K1,K2,EQ1(I),EE(I,1),K3,K4,EQ1(I+42),EE(I+42,1)
302   WRITE(6,802)K1,K2,EQ1(I),EE(I,1),K3,K4,EQ1(I+42),EE(I+42,1)
802   FORMAT(10XI3,I4,2(2XF10.7),3XI4,I5,F12.7,F13.7)
C     CALCULATING OF FILMEFFICIENCYVALUES
      CALL ADVAGF(50,4,F,FA)
C     F AV= FILMAVERAGEVALUE
      B(1)=1.0/(10.0**.15)-1.0/(10.0**.45)
      B(2)=1.0/(10.0**.15)-1.0/(10.0**1.15)
      B(3)=1.0/(10.0**.1)-1.0/(10.0**0.4)
      B(4)=1.0/(10.0**.1)-1.0/(10.0**1.1)
      A=4./(3.1415926*DSQ*DSQ)
      DO 8061  I=1,4
      DO 8061 J=1,50
C     ETA=FILMEFFICIENCYVALUE
```

```
8061  ETA(J,I)=0.
      DO 303 I=1,4
      T=B(I)*1.0E+15
      DO 303 J=1,50
      IF(FA(J,I))304,303,304
304   ETA(J,I)=EQ(J,1)*A*(T/FA(J,I))
303   CONTINUE
      WRITE(6,115)
      WRITE(7,115)
      WRITE(6,804)
      WRITE(7,804)
804   FORMAT(38X7HTABLE 6)
      WRITE(6,105)
      WRITE(7,105)
      WRITE(6,805)
      WRITE(7,805)
805   FORMAT(10X6HLAMBDA7X6HF AV 1,8X7HETA 0.3,7X6HF AV 2,8X7HETA 1.0)
      WRITE(6,105)
      WRITE(7,105)
      DO 305 J=1,49
      K1=XL(J)
      K2=XL(J+1)
      WRITE(7,806)K1,K2,FA(J,1),ETA(J,1),FA(J,2),ETA(J,2)
305   WRITE(6,806)K1,K2,FA(J,1),ETA(J,1),FA(J,2),ETA(J,2)
806   FORMAT(10X13,14,4(3X1PE11.4))
      WRITE(6,115)
      WRITE(7,115)
      WRITE(6,809)
      WRITE(7,809)
809   FORMAT(38X7HTABLE 7)
      WRITE(6,105)
      WRITE(7,105)
      WRITE(6,810)
      WRITE(7,810)
810   FORMAT(10X6HLAMBDA7X6HF AV 3,8X7HETA 0.3,7X6HF AV 4,8X7HETA 1.0)
      WRITE(6,105)
      WRITE(7,105)
      DO 306 J=1,49
      K1=XL(J)
      K2=XL(J+1)
      WRITE(7,811)K1,K2,FA(J,3),ETA(J,3),FA(J,4),ETA(J,4)
306   WRITE(6,811)K1,K2,FA(J,3),ETA(J,3),FA(J,4),ETA(J,4)
811   FORMAT(10X13,14,4(3X1PE11.4))
C     CALCULATING OF PHOSPHOREFFICIENCYVALUES
      CALL ADVAGE(50,8,P,PA)
      DO 310 I=1,8
C     SUMP=SUM OF PHOSPHORAVERAGEVALUES
      SUMP(I)=0.
C     SUMET=SUM OF PHOSPHOREFFICIENCIES
      SUMET(I)=0.
C     SUMQ=SUM OF ETAQ
      SUMQ(I)=0.
      DO 310 J=1,50
C     ETAE=PHOSPHOREFFICIENCY
C     PA=PHOSPHORAVERAGEVALUE
      ETAE(J,I)=PA(J,I)*1.6021E-14
      SUMP(I)=SUMP(I)+PA(J,I)*10.
      SUMET(I)=SUMET(I)+ETAE(J,I)
C     CALCULATING OF PHOSPHOREFFICIENCYVALUES IN QUANTA/ELECTRON
C     ETAQ=PHOSPHOREFFICIENCY IN QAUNTA/ELECTRON
      ETAQ(J,I)=ETAE(J,I)/EQ(J,1)
310   SUMQ(I)=SUMQ(I)+ETAQ(J,I)
```

```
      I1=7
      DO312 I=1,8
      IT=I1+I
      WRITE(6,115)
      WRITE(7,115)
      WRITE(6,813)IT
      WRITE(7,813)IT
813   FORMAT(38X6HTABLE I2)
      WRITE(6,105)
      WRITE(7,105)
      WRITE(6,814)I,I,I
      WRITE(7,814)I,I,I
814   FORMAT(10X6HLAMBDA5X5HP AV(I1,1H)9X6HETA E(I1,1H)7X6HETA Q(I1,1H))
      WRITE(6,105)
      WRITE(7,105)
      DO311 J=1,49
      MM=XL(J)
      MK=MM+10
      PT=10.*PA(J,I)
      WRITE(7,815)MM,MK,PT,ETAE(J,I),ETAQ(J,I)
311   WRITE(6,815)MM,MK,PT,ETAE(J,I),ETAQ(J,I)
      WRITE(6,105)
      WRITE(7,105)
      WRITE(6,816)SUMP(I),SUMET(I),SUMQ(I)
      WRITE(7,816)SUMP(I),SUMET(I),SUMQ(I)
815   FORMAT(10XI3,I4,3X1PE11.4,2(5X1PE11.4))
816   FORMAT(10X3HSUM7X1PE11.4,2(5X1PE11.4))
312   CONTINUE
C     CALCULATING OF PHOTOCATHODEEFFICIENCYVALUES
      CALL ADVAGE (85,12,Z,ZA)
C     SUMEZ=SUM OF PHOTOCATHODEEFFICIENCIES
      SUMEZ(I)=0.
      DO 313 I=1,12
      DO 313 J=1,85
C     ETAZ=PHOTOCATHODEEFFICIENCY
      ETAZ(J,I)=EE(J,I)*ZA(J,I)
C     ETARZ=1/ETAZ
      ETARZ(J,I)=1./ETAZ(J,I)
      SUMEZ(I)=SUMEZ(I)+ETAZ(J,I)
      IF(J-49)313,318,313
318   SUMSTE(I)=SUMEZ(I)
313   CONTINUE
      CALL CHECK(ETAZ,PP,IST,XL,IEN)
      DO 600 MM=1,12
      SUMAZ(MM)=SUMEZ(MM)/PP(MM)
600   SUMSAZ(MM)=SUMSTE(MM)/PP(MM)
      I1=15
      DO 702 K=1,12
C     KCHECK IS USED TO SKIP BLANK PAGES OF NONZEROVALUES
      KCHECK(K)=0
      DO 701 L=50,85
      IF(ZA(L,K))700,701,700
700   KCHECK(K)=1
      GOTO 702
701   CONTINUE
702   CONTINUE
      DO319 I=1,12
      IT=I1+I
      WRITE(6,115)
      WRITE(7,115)
      WRITE(6,817)IT
      WRITE(7,817)IT
```

```
817   FORMAT(38X6HTABLE I2)
      WRITE(6,105)
      WRITE(7,105)
      WRITE(6,818)I,I,I
      WRITE(7,818)I,I,I
818   FORMAT(10X6HLAMBDA6X5HZ AV(I2,1H)11X7HETA Z (I2,1H)9X7HETARZ (I2,
     *1H))
      WRITE(6,105)
      WRITE(7,105)
      DO 314 J=1,49
      MM=XL(J)
      MK=MM+10
      WRITE(7,819)MM,MK,ZA(J,I),ETAZ(J,I),ETARZ(J,I)
314   WRITE(6,819)MM,MK,ZA(J,I),ETAZ(J,I),ETARZ(J,I)
819   FORMAT(10XI4,I4,3X1PE11.4,2(8X1PE11.4))
      IF(KCHECK(I))998,901,998
901   WRITE(6,105)
      WRITE(7,105)
      WRITE(6,830)
      WRITE(7,830)
830   FORMAT(11X18HEFFECTIVE INTERVAL)
      WRITE(6,105)
      WRITE(7,105)
      WRITE(6,820)IST(I),IEN(I),SUMSAZ(I)
      WRITE(7,820)IST(I),IEN(I),SUMSAZ(I)
820   FORMAT(11XI3,I4,22X1PE11.4)
998   I1=15
      IF(KCHECK(I))997,319,997
997   WRITE(6,115)
      WRITE(7,115)
      IT=I1+I
      WRITE(6,821)IT
      WRITE(7,821)IT
821   FORMAT(38X6HTABLE I2)
      WRITE(6,105)
      WRITE(7,105)
      WRITE(6,822)I,I,I
      WRITE(7,822)I,I,I
822   FORMAT(10X6HLAMBDA7X5HZ AV(I2,1H)11X7HETA Z (I2,1H)9X7HETARZ (I2,
     *1H))
      WRITE(6,105)
      WRITE(7,105)
      DO 315 J=49,84
      MM=XL(J)
      MK=MM+10
      WRITE(7,823)MM,MK,ZA(J,I),ETAZ(J,I),ETARZ(J,I)
315   WRITE(6,823)MM,MK,ZA(J,I),ETAZ(J,I),ETARZ(J,I)
823   FORMAT(10XI4,I5,3X1PE11.4,2(8X1PE11.4))
      WRITE (6,105)
      WRITE (7,105)
      WRITE(6,825)
      WRITE(7,825)
825   FORMAT(10X18HEFFECTIVE INTERVAL)
      WRITE(6,105)
      WRITE(7,105)
      WRITE(6,826) IST(I),IEN(I),SUMAZ(I)
      WRITE(7,826) IST(I),IEN(I),SUMAZ(I)
826   FORMAT(10XI3,I5,23X1PE11.4)
319   CONTINUE
C     NEW PART 2
      MP=0
      NQ=27
```

```
C      CALCULATING OF NORMALIZED VALUES
       CALL NORM(ETA,49,4,XMAX,XN)
       CALL NORM(ETAE,49,8,XMAXE,XNE)
       CALL NORM(ETAQ,49,8,XMAXQ,XNQ)
       CALL NORM(ETAZ,84,12,XMAXZ,XNZ)
C      PRINTING OF NORMALIZED VALUES
203    NP=NP+1
       NQ=NQ+1
       CALL HEAD(NP,NQ)
       DO 20  J=1,49
       MM=XL(J)
       MK=MM+10
       WRITE(7,201)MM,MK,(XN(J,I),I=1,4)
20     WRITE(6,201)MM,MK,(XN(J,I),I=1,4)
201    FORMAT(10X14,I4,6XF6.4,3(8XF6.4))
       GOTO(204,205,207,205,2081),NP
204    DO 202 I=1,4
       DO 202 J=1,49
202    XN(J,I)=XNE(J,I)
       GOTO 203
205    DO 206 I=5,8
       DO 206 J=1,49
206    XN(J,I-4)=XNE(J,I)
       GOTO 203
207    DO 2071 I=1,8
       DO 2071 J=1,49
2071   XNE(J,I)=XNQ(J,I)
       GOTO 204
2081   KK=0
       NK=5
       NL=32
208    NK=NK+1
       NL=NL+1
       L=1
       N=49
210    CALL HEAD(NK,NL)
       DO 209 J=L,N
       MM=XL(J)
       MK=MM+10
       IF(N-49)2090,2090,2091
2090   WRITE(6,201) MM,MK,(XNZ(J,I),I=1,4)
       WRITE(7,201) MM,MK,(XNZ(J,I),I=1,4)
       GOTO209
2091   WRITE(6,2010)MM,MK,(XNZ(J,I),I=1,4)
       WRITE(7,2010)MM,MK,(XNZ(J,I),I=1,4)
209    CONTINUE
       KK=KK+1
       GOTO(211,212,211,215,211,214),KK
211    L=49
       N=84
       GOTO 210
212    DO 213 I=5,8
       DO 213 J=1,84
213    XNZ(J,I-4)=XNZ(J,I)
       GOTO 208
215    DO 216 I=9,12
       DO 216 J=1,84
216    XNZ(J,I-8)=XNZ(J,I)
       GOTO 208
C      PRINTING OF TABLE WITH NORMALISATIONFACTORS
214    WRITE(6,115)
       WRITE(7,115)
```

```
      WRITE(6,222)
      WRITE(7,222)
      CALL BLANK(1)
      WRITE(6,229)
      WRITE(7,229)
      CALL BLANK(1)
      WRITE(6,262)
      WRITE(7,262)
      CALL BLANK(1)
      WRITE(6,230)
      WRITE(7,230)
      WRITE(6,231)
      WRITE(7,231)
      WRITE(6,217)
      WRITE(7,217)
      WRITE(6,218)
      WRITE(7,218)
      CALL BLANK(1)
      WRITE(6,219) (XMAX(I),I=1,4)
      WRITE(7,219) (XMAX(I),I=1,4)
      CALL BLANK(2)
      WRITE(6,232)
      WRITE(7,232)
      WRITE(6,233)
      WRITE(7,233)
      CALL BLANK(1)
      WRITE(6,220)
      WRITE(7,220)
      CALL BLANK(1)
      WRITE(6,219) (XMAXE(I),I=1,4)
      WRITE(7,219) (XMAXE(I),I=1,4)
      CALL BLANK(1)
      WRITE(6,223)
      WRITE(7,223)
      CALL BLANK()
      WRITE(6,219    MAXE(I),I=5,8)
      WRITE(7,219) (XMAXE(I),I=5,8)
      CALL BLANK(1)
      WRITE(6,232)
      WRITE(7,232)
      WRITE(6,221)
      WRITE(7,221)
      CALL BLANK(1)
      WRITE(6,220)
      WRITE(7,220)
      CALL BLANK(1)
      WRITE(6,219) (XMAXQ(I),I=1,4)
      WRITE(7,219) (XMAXQ(I),I=1,4)
      CALL BLANK(1)
      WRITE(6,223)
      WRITE(7,223)
      CALL BLANK(1)
      WRITE(6,219) (XMAXQ(I),I=5,8)
      WRITE(7,219) (XMAXQ(I),I=5,8)
      CALL BLANK(2)
      WRITE(6,224)
      WRITE(7,224)
      WRITE(6,226)
      WRITE(7,226)
      CALL BLANK(1)
      WRITE(6,225)
      WRITE(7,225)
```

```
      CALL BLANK(1)
      WRITE(6,219) (XMAXZ(I),I=1,4)
      WRITE(7,219) (XMAXZ(I),I=1,4)
      CALL BLANK(1)
      WRITE(6,227)
      WRITE(7,227)
      CALL BLANK(1)
      WRITE(6,219) (XMAXZ(I),I=5,8)
      WRITE(7,219) (XMAXZ(I),I=5,8)
      CALL BLANK(1)
      WRITE(6,228)
      WRITE(7,228)
      CALL BLANK(1)
      WRITE(6,219) (XMAXZ(I),I=9,12)
      WRITE(7,219) (XMAXZ(I),I=9,12)
217   FORMAT(31X7HROYAL X,24X5HTRI X)
218   FORMAT(24X5HD=0.3,10X5HD=1.0,10X5HD=0.3,10X5HD=1.0)
219   FORMAT(10X2HNF=X,4(5X1PE10.4))
220   FORMAT(24X3HP-4,12X4HP-11,11X4HP-16,11X4HP-20)
221   FORMAT(35X15HQUANTA/ELECTRON)
222   FORMAT(38X8HTABLE 36)
223   FORMAT(24X5HP-22B,10X5HP-22G,10X5HP-22R,10X4HP-31)
224   FORMAT(36X12HPHOTOCATHODE)
225   FORMAT(24X3HS-1,12X4HS-20,11X5HS-20R,10X4HS-25)
226   FORMAT(34X17HELECTRONS/QUANTUM)
227   FORMAT(24X6HS-25H!, 9X4HVARO,11X3HS-4,12X4HS-11)
228   FORMAT(24X4HS-17,11X6HVARIAN,9X6HS-20IF,9X5HGA AS)
229   FORMAT(30X26HNORMALISATION FACTORS (NF))
230   FORMAT(40X4HFILM)
231   FORMAT(36X14HGRAINS/QUANTUM)
232   FORMAT(38X8HPHOSPHOR)
233   FORMAT(35X15HJOULES/ELECTRON)
234   FORMAT(20X49HSPECTRAL EFFICIENCY OF PHOSPHOR-FILM COMBINATIONS)
260   FORMAT(14X57HSPECTRAL EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINAT
     *IONS)
261   FORMAT(10XI4,I4,2X,4(3X1PE11.4))
262   FORMAT(41X3HFOR)
2010  FORMAT(10XI4,I5,6XF6.4,3(8XF6.4))
C     PART 3, COMBINATION PHOSPHOR-FILM, PHOSPHOR-PHOTOCATHODE
      CALL COMBI(ETAQ,49,8,ETA,49,4,PPP,SPF)
      NR=0
      KI=9
      NN=36
      DO 2351 IP=4,32,4
      IS=IP-3
      NR=IP/4
      CALL HEAD(KI,NN+NR)
      WRITE(6,234)
      WRITE(7,234)
      WRITE(6,242)
      WRITE(7,242)
      CALL BLANK(1)
      WRITE(6,238)(DP(NR),BP(J),J=1,4)
      WRITE(7,238)(DP(NR),BP(J),J=1,4)
      CALL BLANK(1)
238   FORMAT(10X6HLAMBDA,5X,4(2X2A6))
      DO 235 J=1,49
      MM=XL(J)
      MK=MM+10
      WRITE(7,261)MM,MK,(PPP(J,M),M=IS,IP)
235   WRITE(6,261)MM,MK,(PPP(J,M),M=IS,IP)
      CALL BLANK(1)
```

```
      WRITE(6,236) (SPF(N),N=IS,IP)
      WRITE(7,236) (SPF(N),N=IS,IP)
2351  CONTINUE
      CALL COMBI(ETAQ,49,8,ETAZ,49,12,PPP,SPP)
      NRF=0
      IK=9
      IKK=1
      KS=0
      NM=44
      L=0
      DO 2371 IP=4,96,4
      L=L+4
      KS=L-3
      IS=IP-3
      NRR=IP/4
      CALL HEAD(IK,NM+NRR)
      WRITE(6,260)
      WRITE(7,260)
      WRITE(6,247)
      WRITE(7,247)
      CALL BLANK(1)
      WRITE(6,238)(DP(IKK),CP(M),M=KS,L)
      WRITE(7,238)(DP(IKK),CP(M),M=KS,L)
      CALL BLANK(1)
      DO 237 J=1,49
      MM=XL(J)
      MK=MM+10
      WRITE(7,261)MM,MK,(PPP(J,M),M=IS,IP)
237   WRITE(6,261)MM,MK,(PPP(J,M),M=IS,IP)
      CALL BLANK(1)
      WRITE(6,236) (SPP(N),N=IS,IP)
      WRITE(7,236) (SPP(N),N=IS,IP)
      IF(L-12)2371,239,239
239   L=0
      IKK=IKK+1
2371  CONTINUE
236   FORMAT(10X3HSUM7X,4(3X1PE11.4))
C     PRINTING OF  SUMS OF COMBINATIONVALUES
      WRITE(6,115)
      WRITE(7,115)
      WRITE(6,240)
      WRITE(7,240)
      CALL BLANK(1)
      WRITE(6,241)
      WRITE(7,241)
      WRITE(6,242)
      WRITE(7,242)
      CALL BLANK(1)
      WRITE(6,217)
      WRITE(7,217)
      WRITE(6,218)
      WRITE(7,218)
      CALL BLANK(3)
      IP=0
      DO 244 J=1,8
      IP=IP+4
      IS=IP-3
      WRITE(6,243) AP(J),(SPF(I),I=IS,IP)
      WRITE(7,243) AP(J),(SPF(I),I=IS,IP)
      CALL BLANK(2)
244   CONTINUE
240   FORMAT(38X8HTABLE 69)
```

```
241   FORMAT(24X40HEFFICIENCY OF PHOSPHOR-FILM COMBINATIONS)
242   FORMAT(35X15HGRAINS/ELECTRON)
243   FORMAT(10X,1A6,1X,4(5X1PE10.4))
      IP=0
      DO 248 IK=1,3
      WRITE(6,115)
      WRITE(7,115)
      IT=69+IK
      WRITE(6,245)IT
      WRITE(7,245)IT
      CALL BLANK(1)
      WRITE(6,246)
      WRITE(7,246)
      WRITE(6,247)
      WRITE(7,247)
      CALL BLANK(1)
      GOTO(249,250,251),IK
249   WRITE(6,225)
      WRITE(7,225)
      GOTO252
250   WRITE(6,227)
      WRITE(7,227)
      GOTO252
251   WRITE(6,228)
      WRITE(7,228)
252   CALL BLANK(3)
      DO 253 J=1,8
      IP=IP+4
      IS=IP-3
      WRITE(6,243) AP(J),(SPP(I),I=IS,IP)
      WRITE(7,243) AP(J),(SPP(I),I=IS,IP)
      CALL BLANK(2)
      IP=IP+8
253   CONTINUE
      IF(IK-2)2531,2532,248
2531  IP=4
      GOTO 248
2532  IP=8
248   CONTINUE
245   FORMAT(38X6HTABLE I2)
246   FORMAT(19X48HEFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS)
247   FORMAT(28X29HPHOTOELECTRONS/10 KV-ELECTRON)
      STOP
      END
```

```
$IBFTC SPICER
      SUBROUTINE LOAD(N1,M,P)
C     THIS PROGRAM READS CARDS
C     SEE PLOTTING PROGRAM FOR MORE INFORMATIONS
      DIMENSION P(85,12)
7     DO 12  I=1,M
      DO 12  J=1,N1
12    P(J,I)=0.0
      L=N1+1
      DO 6 J=1,M
      READ (5,100) K
21    DO 3 N=K,L
      READ (5,101) X
      IF(X)5,6,5
5     P(N,J)=X
3     CONTINUE
6     CONTINUE
100   FORMAT  (I2)
101   FORMAT(E14.7)
      RETURN
      END
```

```
$IBFTC ADVGE
      SUBROUTINE ADVAGE(M,K,P,PV)
C     THIS PROGRAM CALCULATES AVERAGEVALUES
       DIMENSION P(85,12),PV(85,12)
C     M=NUMBER OF VALUES
C     K=NUMBER OF ARRAYS
C     P=VALUES READ IN, PV=VALUES AVERAGE
      MM=M-1
      DO 15 J=1,M
      DO 15 I=1,K
15    PV(J,I)=0.
      DO 13 I=1,K
      DO 13 J=1,MM
C     CHECK FOR ZEROVALUES
      IF(P(J,I))14,13,14
14    IF(P(J+1,I))16,13,16
C     CALCULATE AVERAGE
16    PV(J,I)=(P(J,I)+P(J+1,I))*.5
13    CONTINUE
       RETURN
       END
```

```
$IBFTC SORT
      SUBROUTINE CHECK(X,PP,IST,XL,IEN)
      DIMENSIONX(85,12),PP(12),IST(12),XL(85),IEN(12)
C     THIS PROGRAM FINDS THE EFFECTIVE INTERVAL
C     X=PHOTOCATHODEEFFICIENCY
C     PP=NUMBER OF NONZEROVALUES
C     IST=STARTPOINT OF FIRST NONZEROVALUE
C     XL=WAVELENGTH
C     IEN=LAST NONZEROVALUE
      DO 7K=1,12
      ID=0
      M=0
      N=0
      DO 8 L=1,85
      IF(X(L,K)-1.0E-06)10,19,9
9     M=M+1
      ID=1
      GOTO 8
10    IF(ID)8,3,8
3     N=N+1
8     CONTINUE
      PP(K)=M
      IST(K)=XL(N+1)
7     IEN(K)=250+10*(M+N)
      RETURN
19    STOP
      END
```

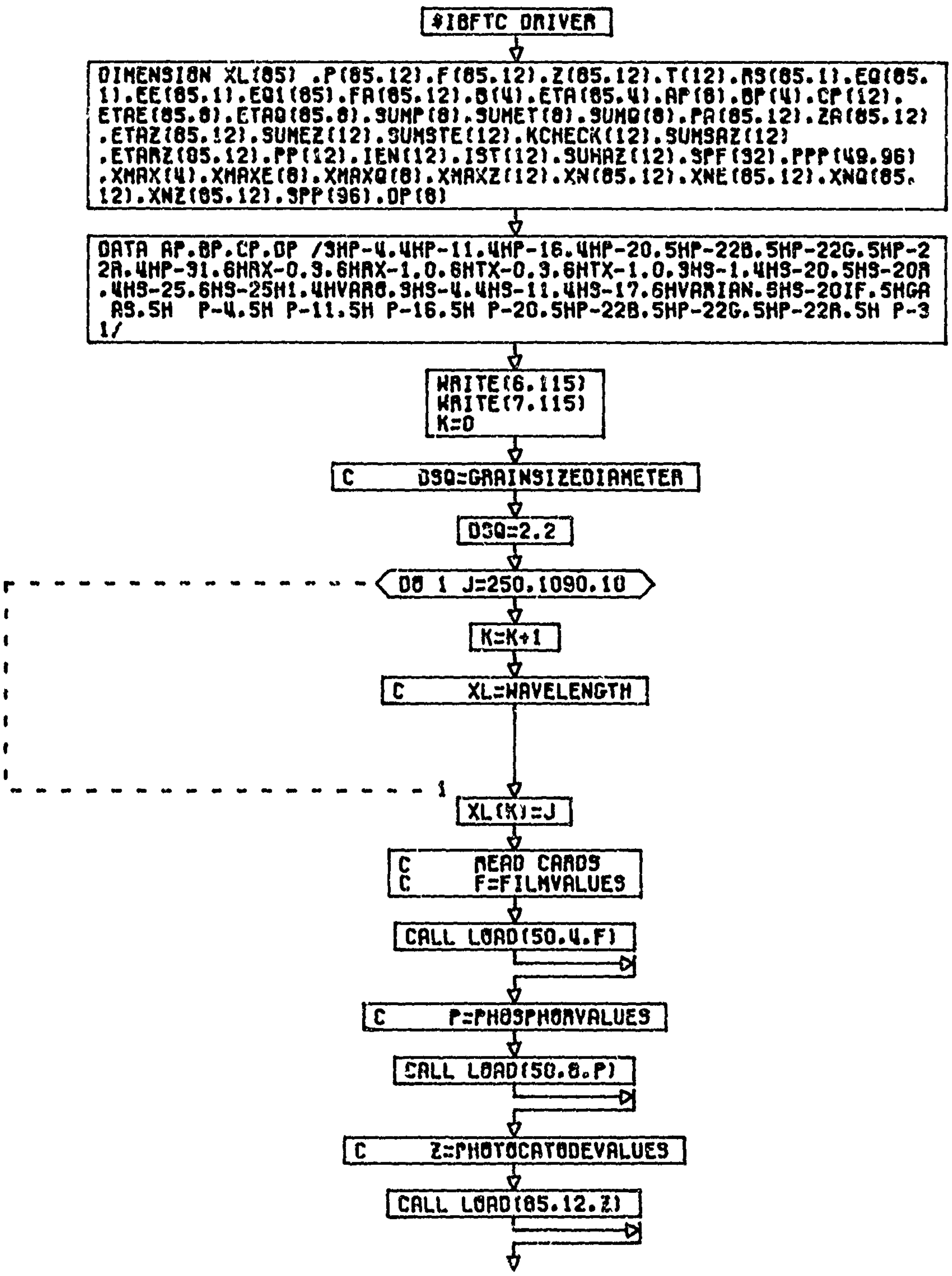
```
$IBFTC MAXVL
      SUBROUTINE NORM (X,N,M,XMAX,XN)
      DIMENSION X(85,12),XMAX(12),XN(85,12)
C     THIS PROGRAM NORMALZIED ALL EFFICIENCYVALUES
C     X=VALUES TO BE NORMALIZED
C     N = NUMBER OF VALUES
C     M=NUMBER OF ARRAYS
C     XMAX=MAX. VALUE OF A COLUMN
C     XN=NORMALIZED VALUE
C     MAX VALUE OF A COLUMN
      DO 5 I=1,M
      XMAX(I)=X(1,I)
      DO 5 J=1,N
      IF(XMAX(I)-X(J,I))6,5,5
6     XMAX(I)=X(J,I)
5     CONTINUE
      DO 7 I=1,M
      DO 7 J=1,N
C     NORMALISATION
7     XN(J,I)=X(J,I)/XMAX(I)
      RETURN
      END
```

```
$IBFTC HEADL
      SUBROUTINE HEAD(ID,IT)
C     THIS PROGRAM PRINTS HEADINGS
C     ID=INDICATION OF HEADLINE NUMBER
C     IT=TABLENUMBER
      WRITE(6,115)
      WRITE(7,115)
      WRITE(6,50)IT
      WRITE(7,50)IT
50    FORMAT(38X6HTABLE I2)
      WRITE(6,105)
      WRITE(7,105)
      GOTO(51,52,53,54,55,56,57,58,59),ID
51    WRITE(6,151)
      WRITE(7,151)
      GOTO 49
52    WRITE(6,152)
      WRITE(7,152)
      GOTO 49
53    WRITE(6,153)
      WRITE(7,153)
      GOTO 49
54    WRITE(6,154)
      WRITE(7,154)
      GOTO 49
55    WRITE(6,155)
      WRITE(7,155)
      GOTO 49
56    WRITE(6,156)
      WRITE(7,156)
      GOTO 49
57    WRITE(6,157)
      WRITE(7,157)
      GOTO 49
58    WRITE(6,158)
      WRITE(7,158)
49    WRITE(6,105)
      WRITE(7,105)
105   FORMAT(1H )
115   FORMAT(1H1)
151   FORMAT(10X6HLAMBDA9X6HETAN 1,8X6HETAN 2,8X6HETAN 3,8X6HETAN 4)
152   FORMAT(10X6HLAMBDA9X7HETAEN 1,7X7HETAEN 2,7X7HETAEN 3,7X7HETAEN 4)
153   FORMAT(10X6HLAMBDA9X7HETAEN 5,7X7HETAEN 6,7X7HETAEN 7,7X7HETAEN 8)
154   FORMAT(10X6HLAMBDA9X7HETAQN 1,7X7HETAQN 2,7X7HETAQN 3,7X7HETAQN 4)
155   FORMAT(10X6HLAMBDA9X7HETAQN 5,7X7HETAQN 6,7X7HETAQN 7,7X7HETAQN 8)
156   FORMAT(10X6HLAMBDA9X7HETAZN 1,7X7HETAZN 2,7X7HETAZN 3,7X7HETAZN 4)
157   FORMAT(10X6HLAMBDA9X7HETAZN 5,7X7HETAZN 6,7X7HETAZN 7,7X7HETAZN 8)
158   FORMAT(10X6HLAMBDA9X7HETAZN 9,7X8HETAZN 10,6X8HETAZN 11,6X8HETAZN
     *12)
59    RETURN
      END
```

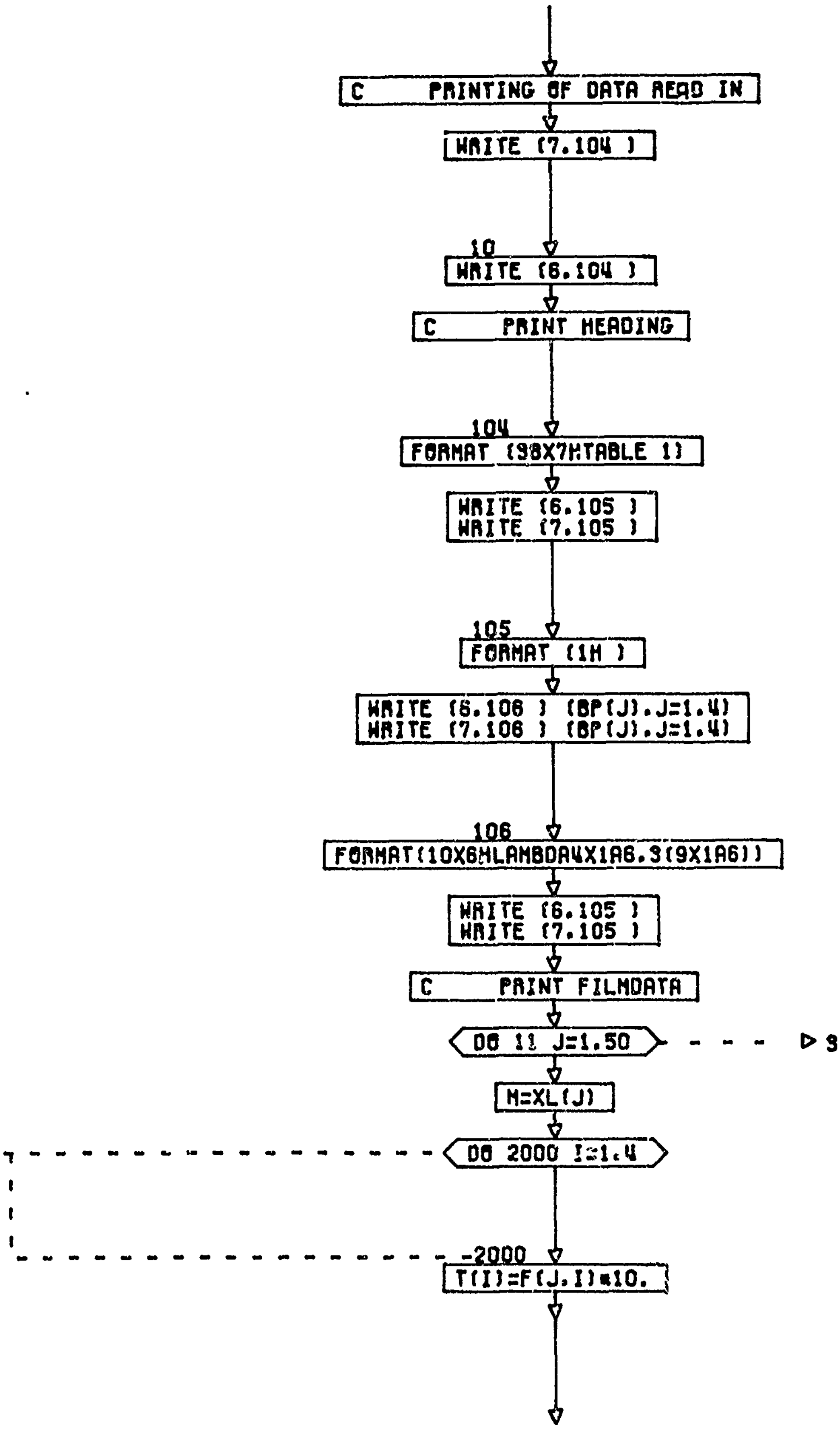
```
$IBFTC LINES
C       BLANK LINES
        SUBROUTINE BLANK(L)
C       L=NUMBER OF BLANK LINFS
        DO1 I=1,L
        WRITE(7,105)
1       WRITE(6,105)
105     FORMAT(1H )
        RETURN
        END
```

```
$IBFTC MULCOM
      SUBROUTINE COMBI(PH,L,K,SL,M,N,PL,SPL)
      DIMENSION PH(85,12),PL(49,96),SPL(96),SL(85,12)
C     SEE PLOTTINGPROGRAM
      MM=0
      DO 10 IP=1,K
      DO 11 IL=1,N
      MM=MM+1
      SPL(MM)=0.
      DO 11 J=1,M
      PL(J,MM)=PH(J,IP)*SL(J,IL)
      SPL(MM)=SPL(MM)+PL(J,MM)
11    CONTINUE
10    CONTINUE
      RETURN
      END
```

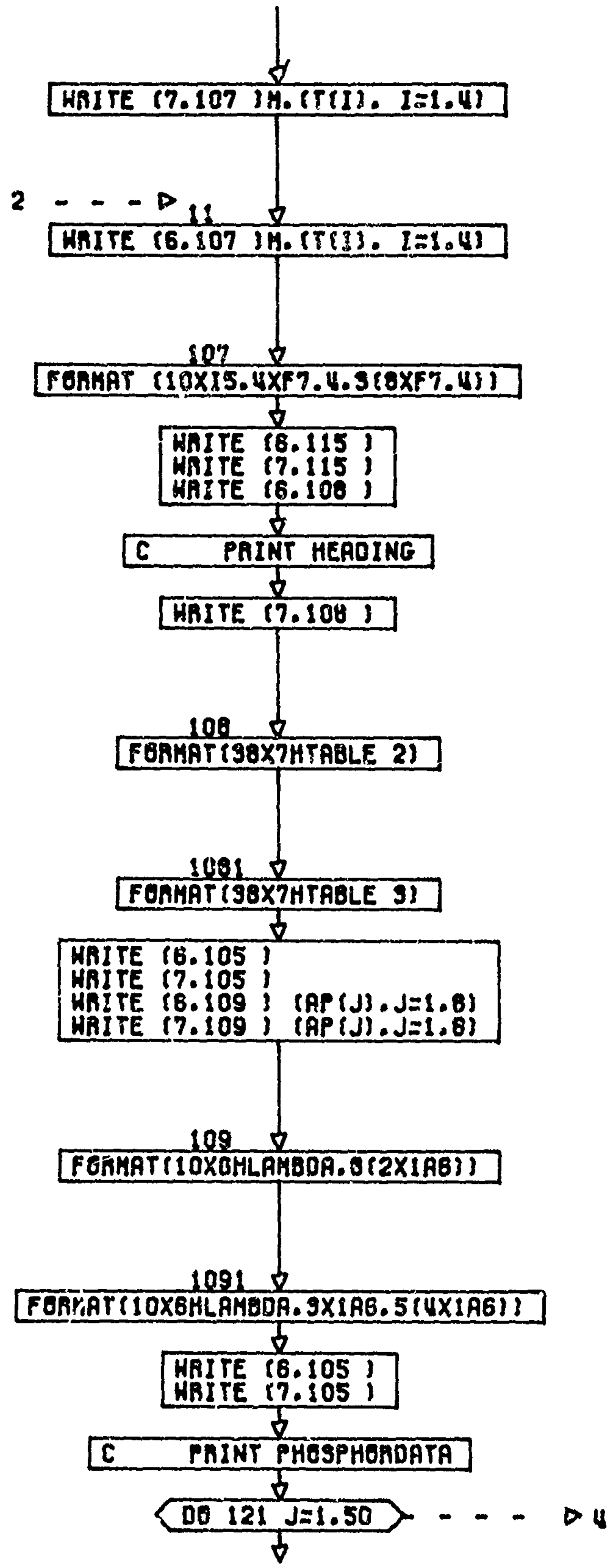
3. FLOW CHART OF PROGRAM USED FOR TABLES



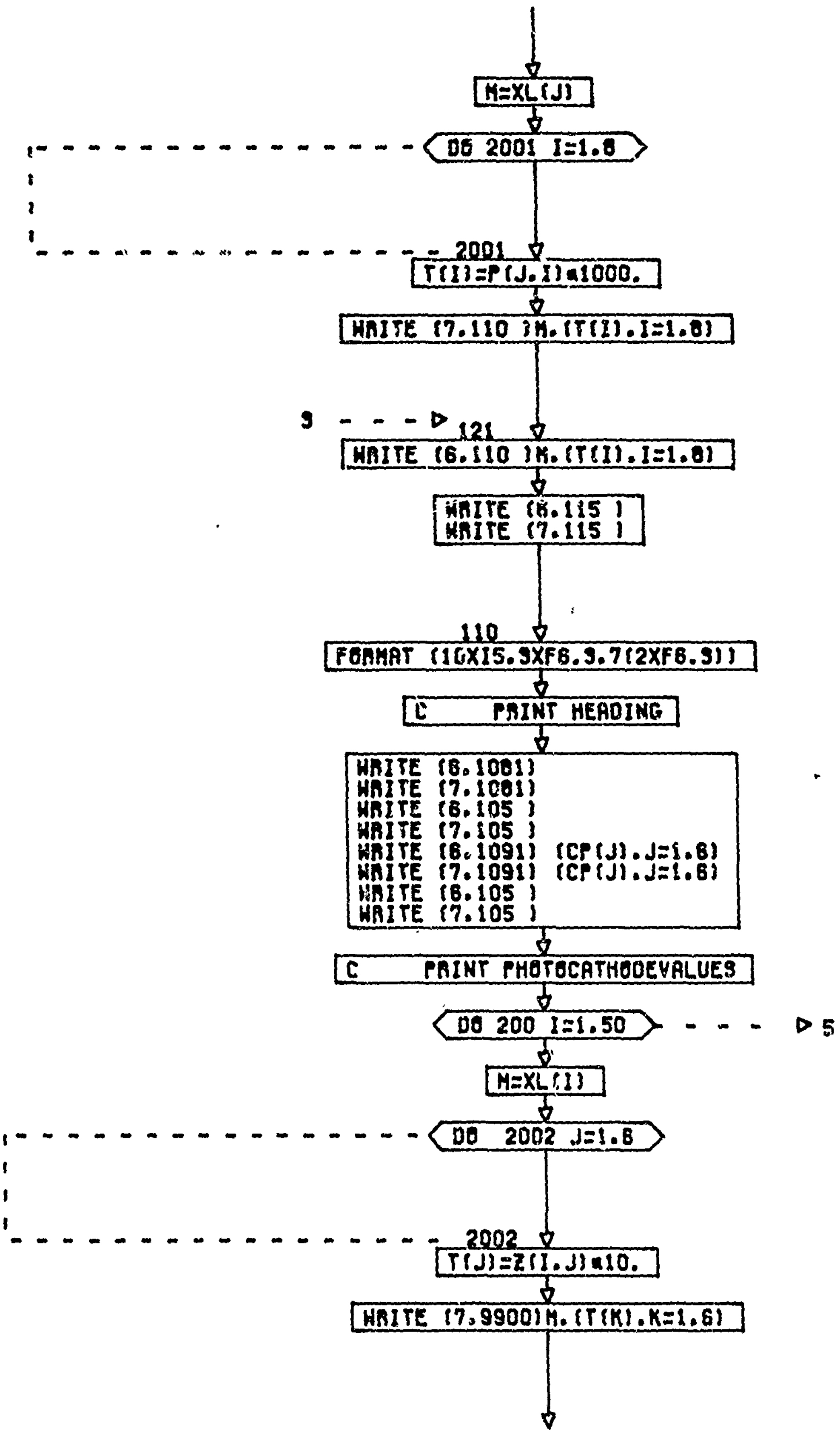
CONT. ON PG 2


C PRINTING OF DATA READ IN
WRITE (7.104)
10
WRITE (6.104)
C PRINT HEADING
104
FORMAT (38X7HTABLE 1)
WRITE (6.105)
WRITE (7.105)
105
FORMAT (1H)
WRITE (6.106) (BP(J).J=1.4)
WRITE (7.106) (BP(J).J=1.4)
106
FORMAT(10X6HLAMBDA4X1A6.3(9X1A6))
WRITE (6.105)
WRITE (7.105)
C PRINT FILMDATA
DO 11 J=1.50
3
M=XL(J)
DO 2000 I=1.4
2000
T(I)=F(J.I)*10.

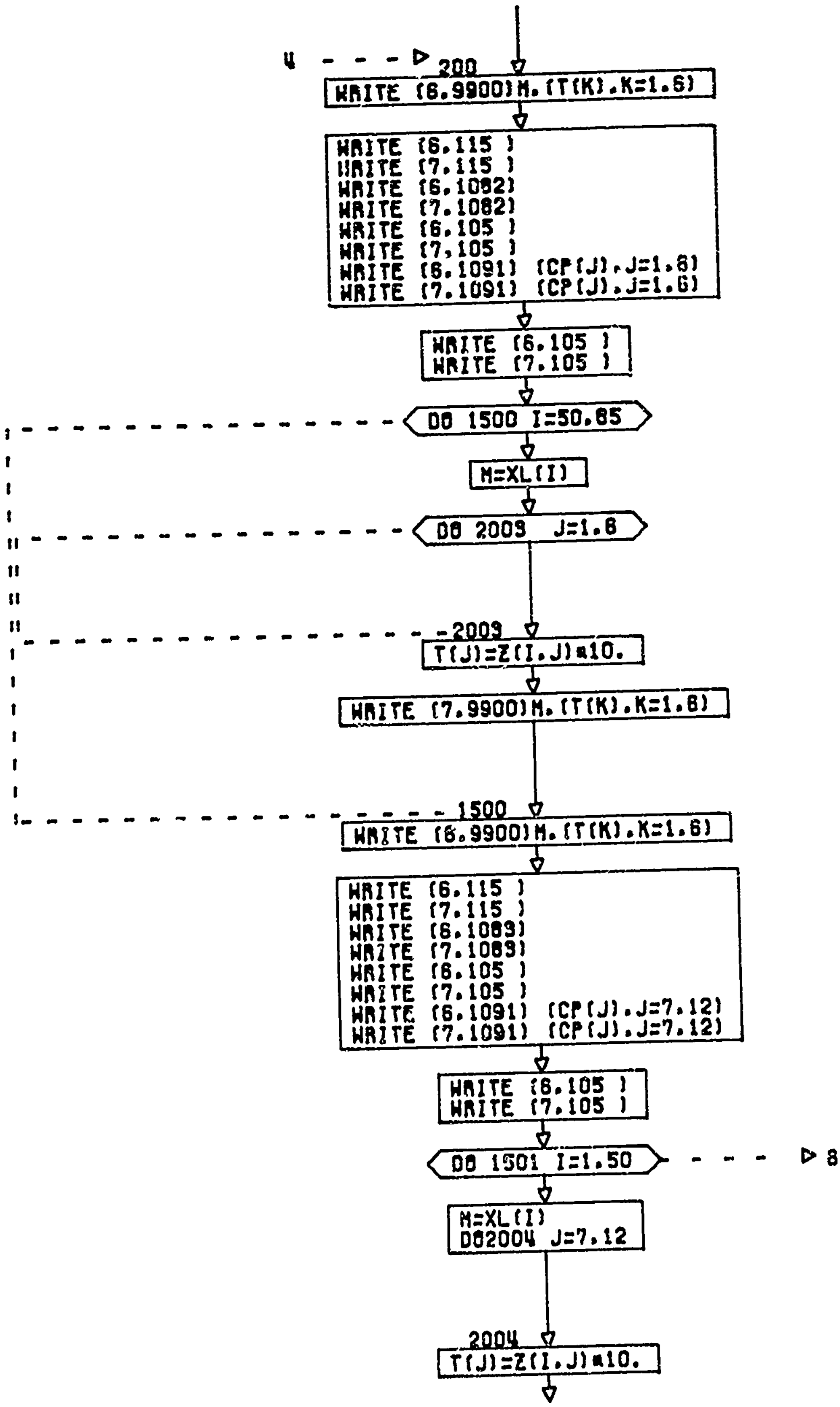
CONT. ON PG 3


WRITE (7.107)M.(T(I). I=1.4)
2 - - - ▷ 11
WRITE (6.107)M.(T(I). I=1.4)
107
FORMAT (10XI5.4XF7.4.3(8XF7.4))
WRITE (6.115)
WRITE (7.115)
WRITE (6.108)
C PRINT HEADING
WRITE (7.108)
108
FORMAT(38X7HTABLE 2)
1081
FORMAT(38X7HTABLE 3)
WRITE (6.105)
WRITE (7.105)
WRITE (6.109) (AP(J).J=1.8)
WRITE (7.109) (AP(J).J=1.8)
109
FORMAT(10X6HLAMBDA.8(2X1A6))
1091
FORMAT(10X6HLAMBDA.3X1A6.5(4X1A6))
WRITE (6.105)
WRITE (7.105)
C PRINT PHOSPHORDATA
DO 121 J=1.50
- - - ▷ 4

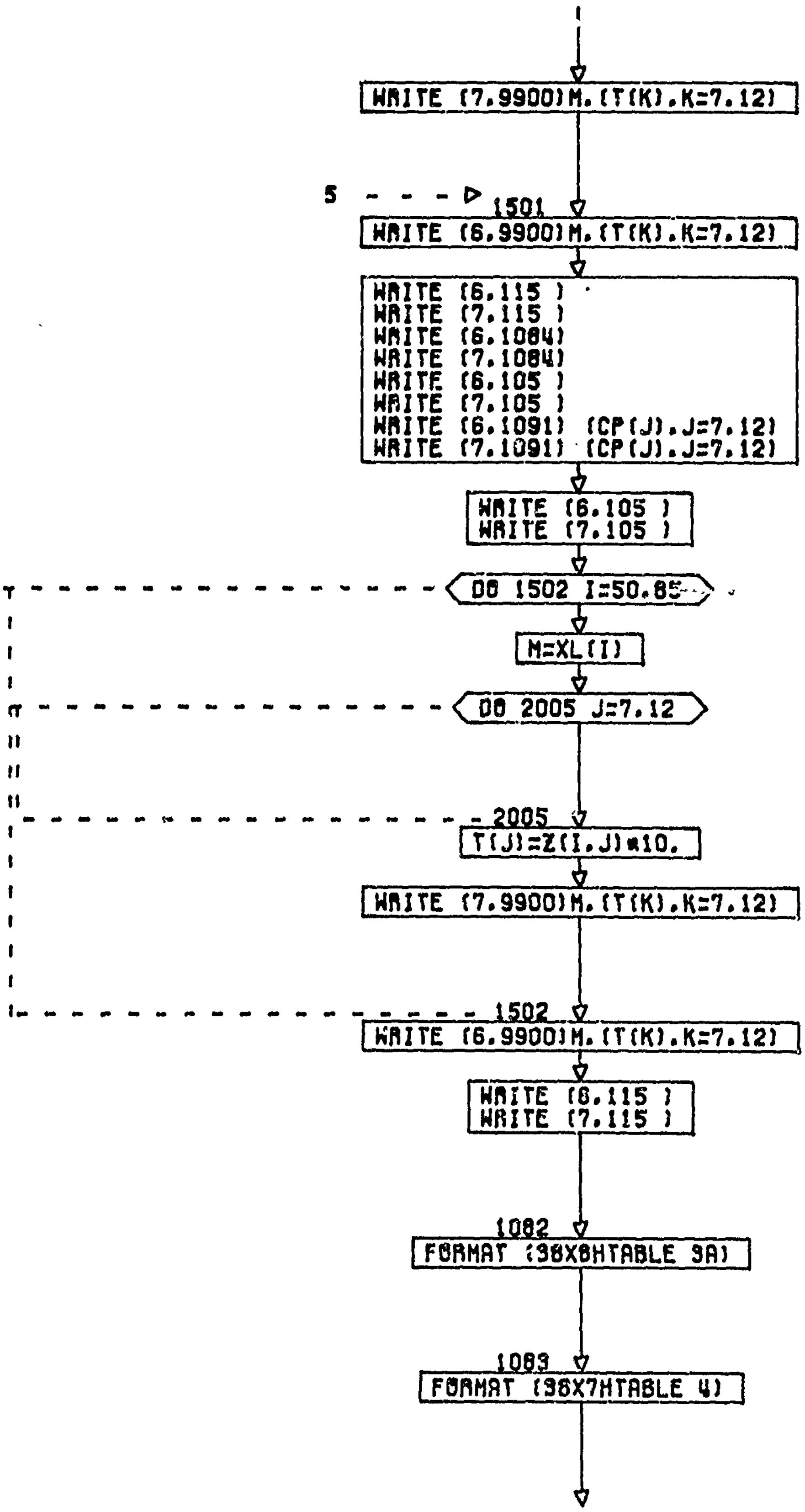
CONT. ON PG 4


M=XL(J)
DO 2001 I=1.8
2001
T(I)=P(J.I)*1000.
WRITE (7.110)M.(T(I).I=1.8)
3
121
WRITE (6.110)M.(T(I).I=1.8)
WRITE (6.115)
WRITE (7.115)
110
FORMAT (10XI5.3XF6.3.7(2XF6.3))
C PRINT HEADING
WRITE (6.1081)
WRITE (7.1081)
WRITE (6.105)
WRITE (7.105)
WRITE (6.1091) (CP(J).J=1.8)
WRITE (7.1091) (CP(J).J=1.8)
WRITE (6.105)
WRITE (7.105)
C PRINT PHOTOCATHODEVALUES
DO 200 I=1.50
5
M=XL(I)
DO 2002 J=1.8
2002
T(J)=Z(I.J)*10.
WRITE (7.9900)M.(T(K).K=1.8)

CONT. ON PG 5

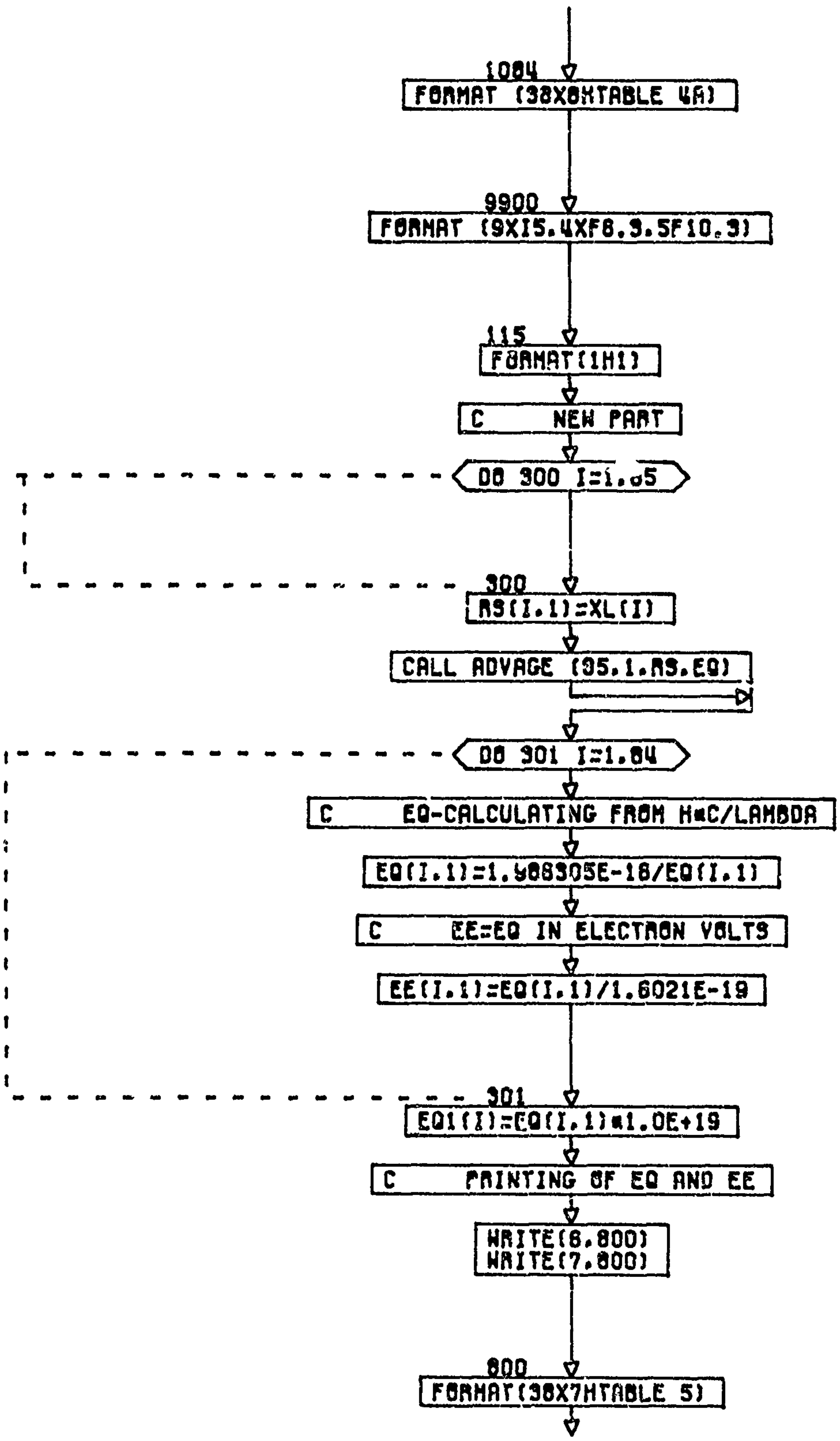

4
200
WRITE (6,9900)M,(T(K),K=1,6)
WRITE (6,115)
WRITE (7,115)
WRITE (6,1082)
WRITE (7,1082)
WRITE (6,105)
WRITE (7,105)
WRITE (6,1091) (CP(J),J=1,6)
WRITE (7,1091) (CP(J),J=1,6)
WRITE (6,105)
WRITE (7,105)
DO 1500 I=50,65
M=XL(I)
DO 2009 J=1,6
2009
T(J)=Z(I,J)*10.
WRITE (7,9900)M,(T(K),K=1,6)
1500
WRITE (6,9900)M,(T(K),K=1,6)
WRITE (6,115)
WRITE (7,115)
WRITE (6,1083)
WRITE (7,1083)
WRITE (6,105)
WRITE (7,105)
WRITE (6,1091) (CP(J),J=7,12)
WRITE (7,1091) (CP(J),J=7,12)
WRITE (6,105)
WRITE (7,105)
DO 1501 I=1,50
8
M=XL(I)
DO2004 J=7,12
2004
T(J)=Z(I,J)*10.

CONT. ON PG 6



WRITE (7,9900)M,(T(K),K=7,12)
5
1501
WRITE (6,9900)M,(T(K),K=7,12)
WRITE (6,115)
WRITE (7,115)
WRITE (6,1084)
WRITE (7,1084)
WRITE (6,105)
WRITE (7,105)
WRITE (6,1091) (CP(J),J=7,12)
WRITE (7,1091) (CP(J),J=7,12)
WRITE (6,105)
WRITE (7,105)
DO 1502 I=50,85
M=XL(I)
DO 2005 J=7,12
2005
T(J)=Z(I,J)*10.
WRITE (7,9900)M,(T(K),K=7,12)
1502
WRITE (6,9900)M,(T(K),K=7,12)
WRITE (6,115)
WRITE (7,115)
1082
FORMAT (38X8HTABLE 3A)
1083
FORMAT (38X7HTABLE 4)

CONT. ON PG 7


1084
FØRMAT (38X8HTABLE 4A)
9900
FØRMAT (9XI5.4XF8.3.5F10.3)
115
FØRMAT(1H1)
C NEW PART
DØ 300 I=1.65
300
AS(I.1)=XL(I)
CALL ADVAGE (95.1.AS.EQ)
DØ 301 I=1.64
C EQ-CALCULATING FRØM H*C/LAMBDA
EQ(I.1)=1.988305E-16/EQ(I.1)
C EE=EQ IN ELECTRØN VØLTS
EE(I.1)=EQ(I.1)/1.6021E-19
301
EQ1(I)=EQ(I.1)*1.0E+19
C PRINTING ØF EQ AND EE
WRITE(6.800)
WRITE(7.800)
800
FØRMAT(38X7HTABLE 5)

CONT. ØN PG 8

```
WRITE(6.105)
WRITE(7.105)
WRITE(6.801)
WRITE(7.801)

801
FORMAT(10X6HLAMBDA7X2HEQ10X2HEE10X6HLAMBDA6X2HEQ10X2HEE)

WRITE (6.105)
WRITE (7.105)

DO 302 I=1.42

K1=XL(I)
K2=XL(I+1)
K3=XL(I+42)
K4=K3+10
WRITE(7.802)K1.K2.EQ1(I).EE(I.1).K3.K4.EQ1(I+42).EE(I+42.1)

302
WRITE(6.802)K1.K2.EQ1(I).EE(I.1).K3.K4.EQ1(I+42).EE(I+42.1)

802
FORMAT(10XI3.I4.2(2XF10.7).3XI4.I5.F12.7.F13.7)

C      CALCULATING OF FILMEFFICIENCYVALUES

CALL ADVAGE(50.4.F.FA)

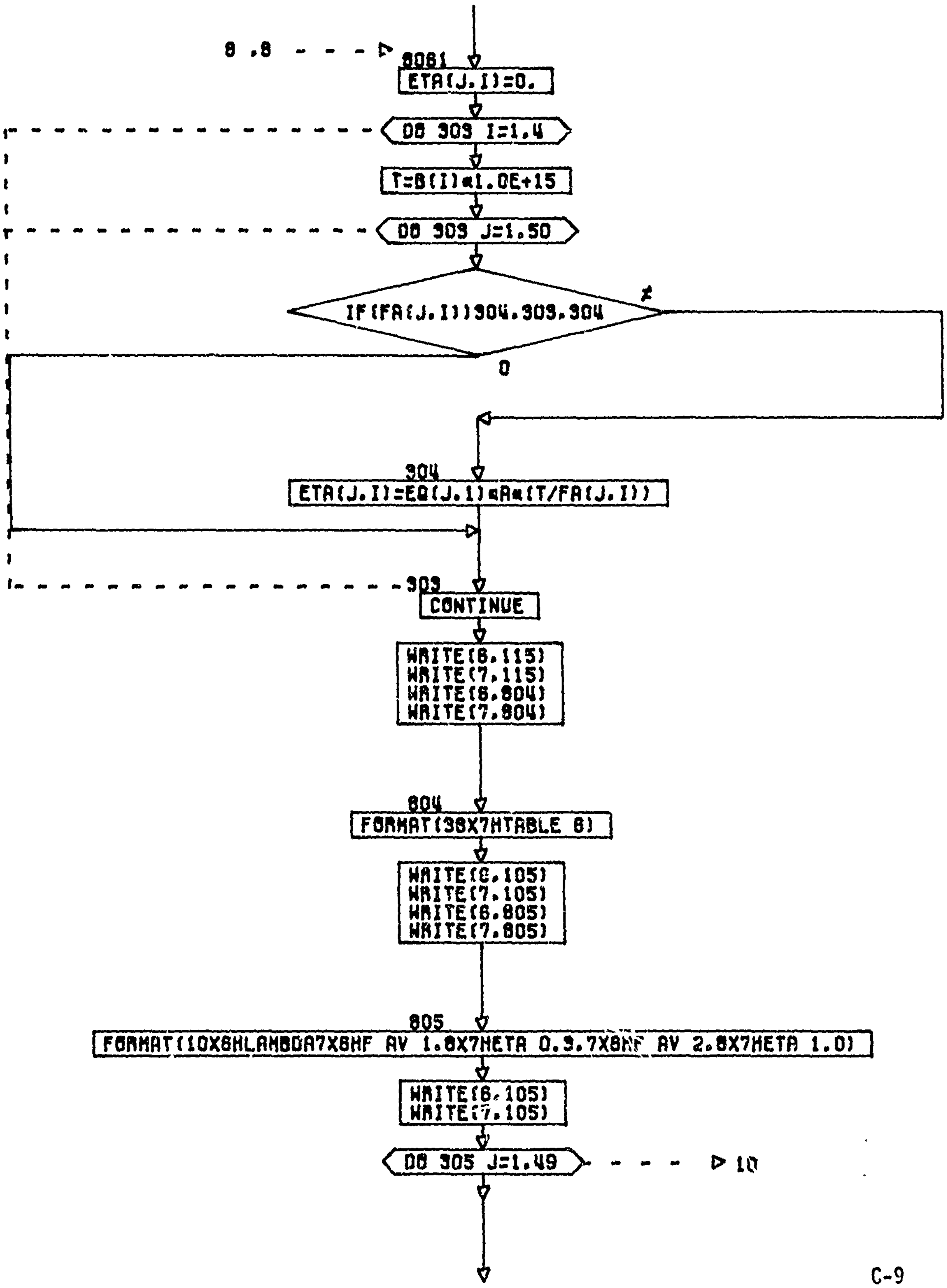
C      F AV= FILMAVERAGEVALUE

B(1)=1.0/(10.0**.15)-1.0/(10.0**.45)
B(2)=1.0/(10.0**.15)-1.0/(10.0**1.15)
B(3)=1.0/(10.0**.1)-1.0/(10.0**0.4)
B(4)=1.0/(10.0**.1)-1.0/(10.0**1.1)
A=4./(3.1415926*DSQ*DSQ)

DO 8081  I=1.4         9
DO 8081  J=1.50        9

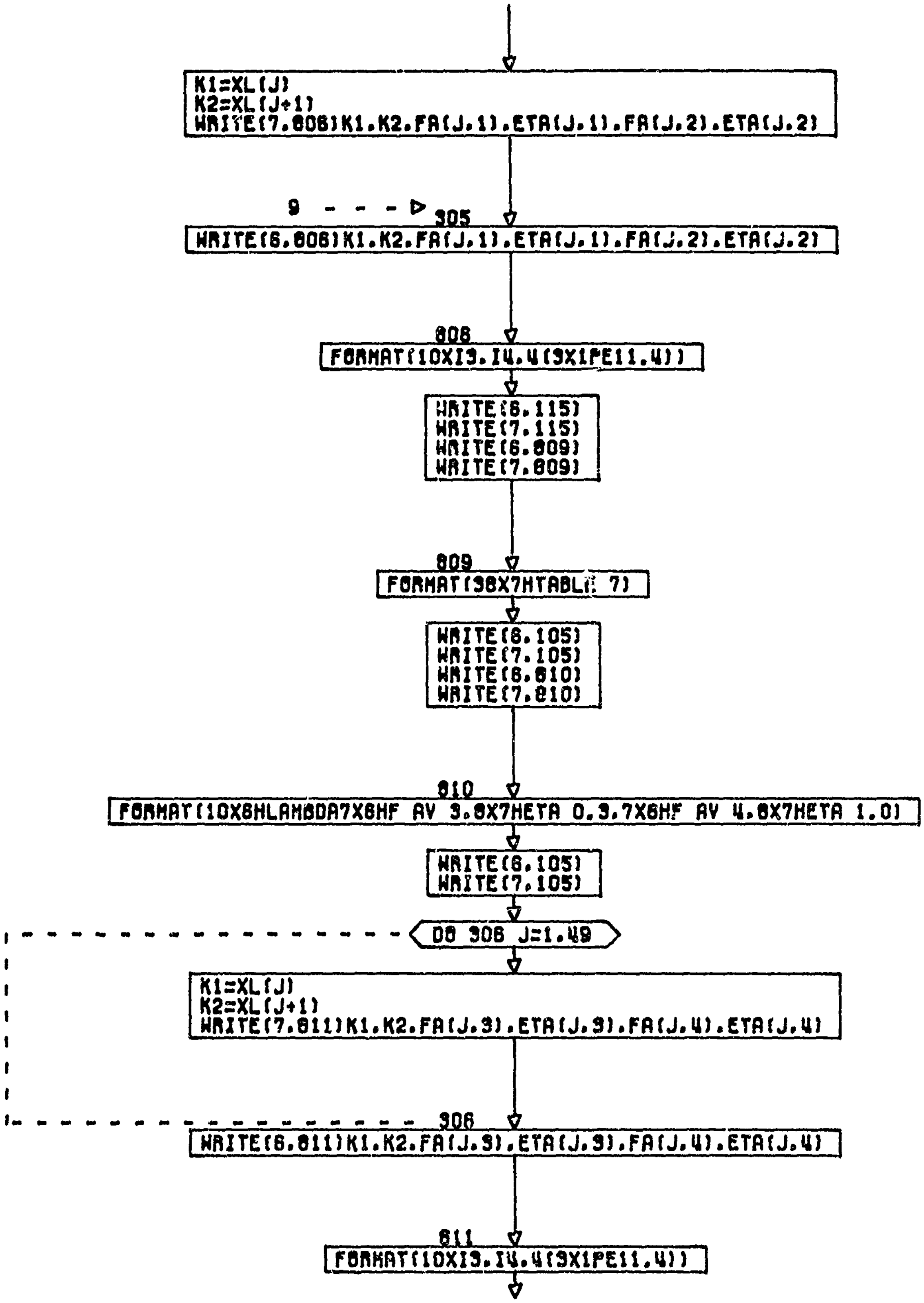
C      ETA=FILMEFFICIENCYVALUE
```

CONT. ON PG 9



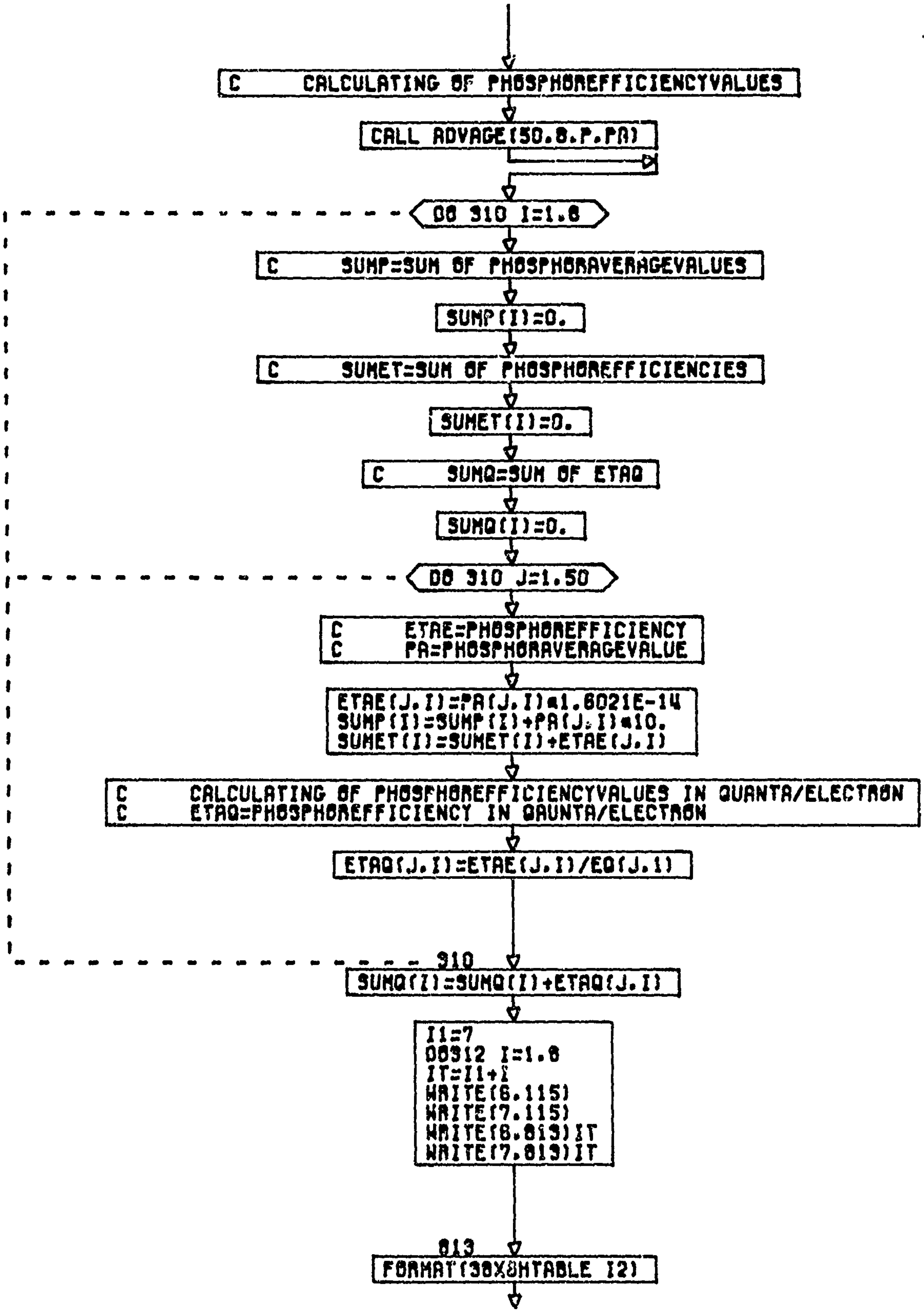
8 ,8
8061
ETA(J,I)=0.
DO 309 I=1,4
T=B(I)*1.0E+15
DO 309 J=1,50
IF(FA(J,I))304,309,304
≠
0
304
ETA(J,I)=EQ(J,I)*A*(T/FA(J,I))
309
CONTINUE
WRITE(6,115)
WRITE(7,115)
WRITE(6,804)
WRITE(7,804)
804
FORMAT(38X7HTABLE 8)
WRITE(6,105)
WRITE(7,105)
WRITE(6,805)
WRITE(7,805)
805
FORMAT(10X6HLAMBDA7X8HF AV 1.8X7HETA 0.9,7X8HF AV 2.8X7HETA 1.0)
WRITE(6,105)
WRITE(7,105)
DO 305 J=1,49
▷ 10

CONT. ON PG 10



K1=XL(J)
K2=XL(J+1)
WRITE(7.806)K1.K2.FA(J.1).ETA(J.1).FA(J.2).ETA(J.2)
9
305
WRITE(6.806)K1.K2.FA(J.1).ETA(J.1).FA(J.2).ETA(J.2)
806
FORMAT(10XI3.I4.4(3X1PE11.4))
WRITE(6.115)
WRITE(7.115)
WRITE(6.809)
WRITE(7.809)
809
FORMAT(38X7HTABLE 7)
WRITE(6.105)
WRITE(7.105)
WRITE(6.810)
WRITE(7.810)
810
FORMAT(10X6HLAMBDA7X6HF AV 3.8X7HETA 0.3.7X6HF AV 4.8X7HETA 1.0)
WRITE(6.105)
WRITE(7.105)
DO 306 J=1.49
K1=XL(J)
K2=XL(J+1)
WRITE(7.811)K1.K2.FA(J.3).ETA(J.3).FA(J.4).ETA(J.4)
306
WRITE(6.811)K1.K2.FA(J.3).ETA(J.3).FA(J.4).ETA(J.4)
811
FORMAT(10XI3.I4.4(3X1PE11.4))

CONT. ON PG 11



C-11

CONT. ON PG 12

```
WRITE(6,105)
WRITE(7,105)
WRITE(6,814)I,I,I
WRITE(7,814)I,I,I

814
FORMAT(10X6HLAMBDA5X3HP AV(I1,1H)9X6HETA E(I1,1H)7X6HETA Q(I1,1H))

WRITE(6,105)
WRITE(7,105)
DO311 J=1,49
MM=XL(J)
MK=MM+10
PT=10.*PA(J,I)
WRITE(7,815)MM,MK,PT,ETAE(J,I),ETAQ(J,I)

311
WRITE(6,815)MM,MK,PT,ETAE(J,I),ETAQ(J,I)

WRITE(6,105)
WRITE(7,105)
WRITE(6,816)SUMP(I),SUMET(I),SUMQ(I)
WRITE(7,816)SUMP(I),SUMET(I),SUMQ(I)

815
FORMAT(10XI3,I4,3X1PE11.4,2(5X1PE11.4))

816
FORMAT(10X3HSUM7X1PE11.4,2(5X1PE11.4))

312
CONTINUE

C     CALCULATING OF PHOTOCATHODEEFFICIENCYVALUES

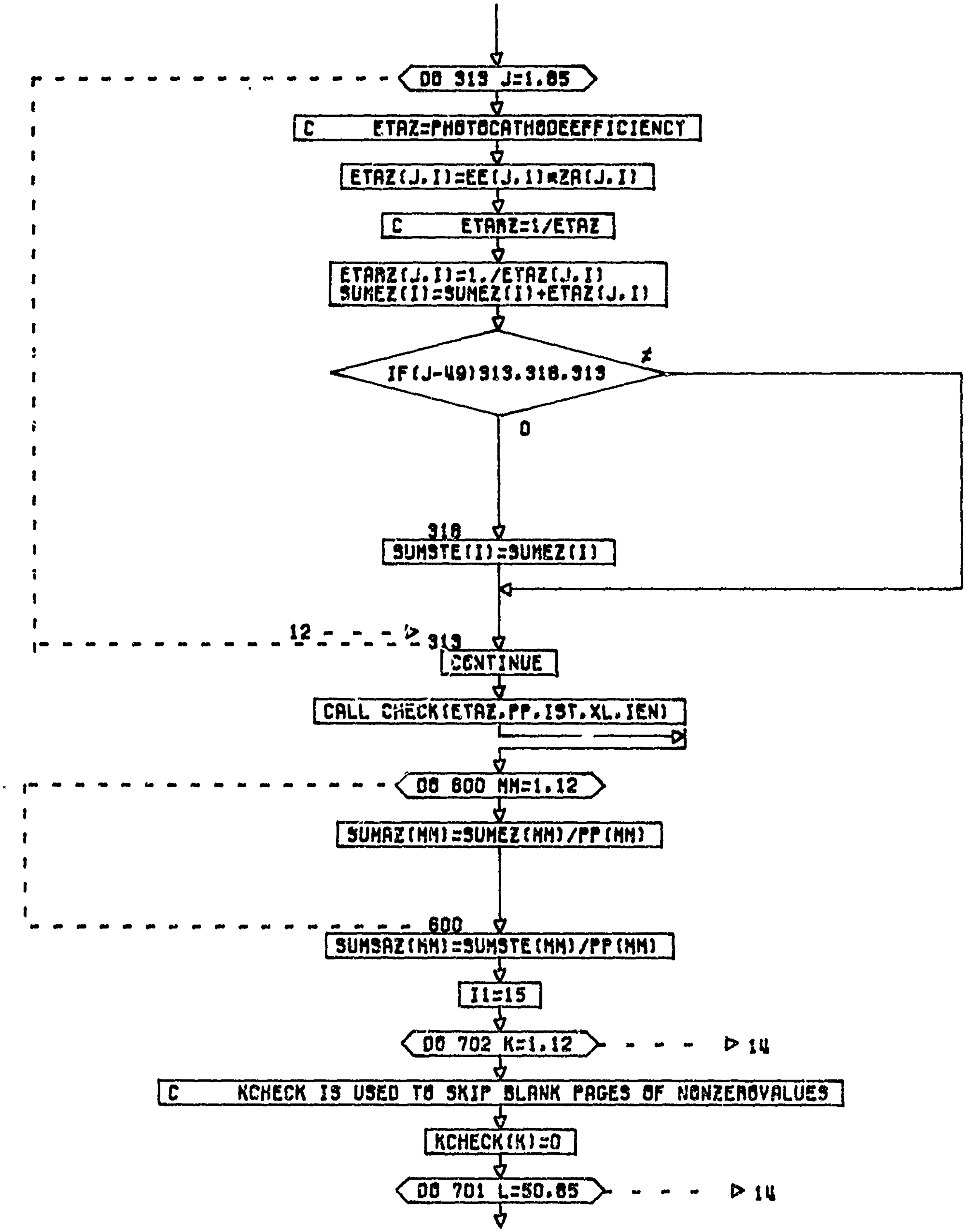
CALL ADVAGE (85,12,Z,ZA)

C     SUMEZ=SUM OF PHOTOCATHODEEFFICIENCIES

SUMEZ(I)=0.

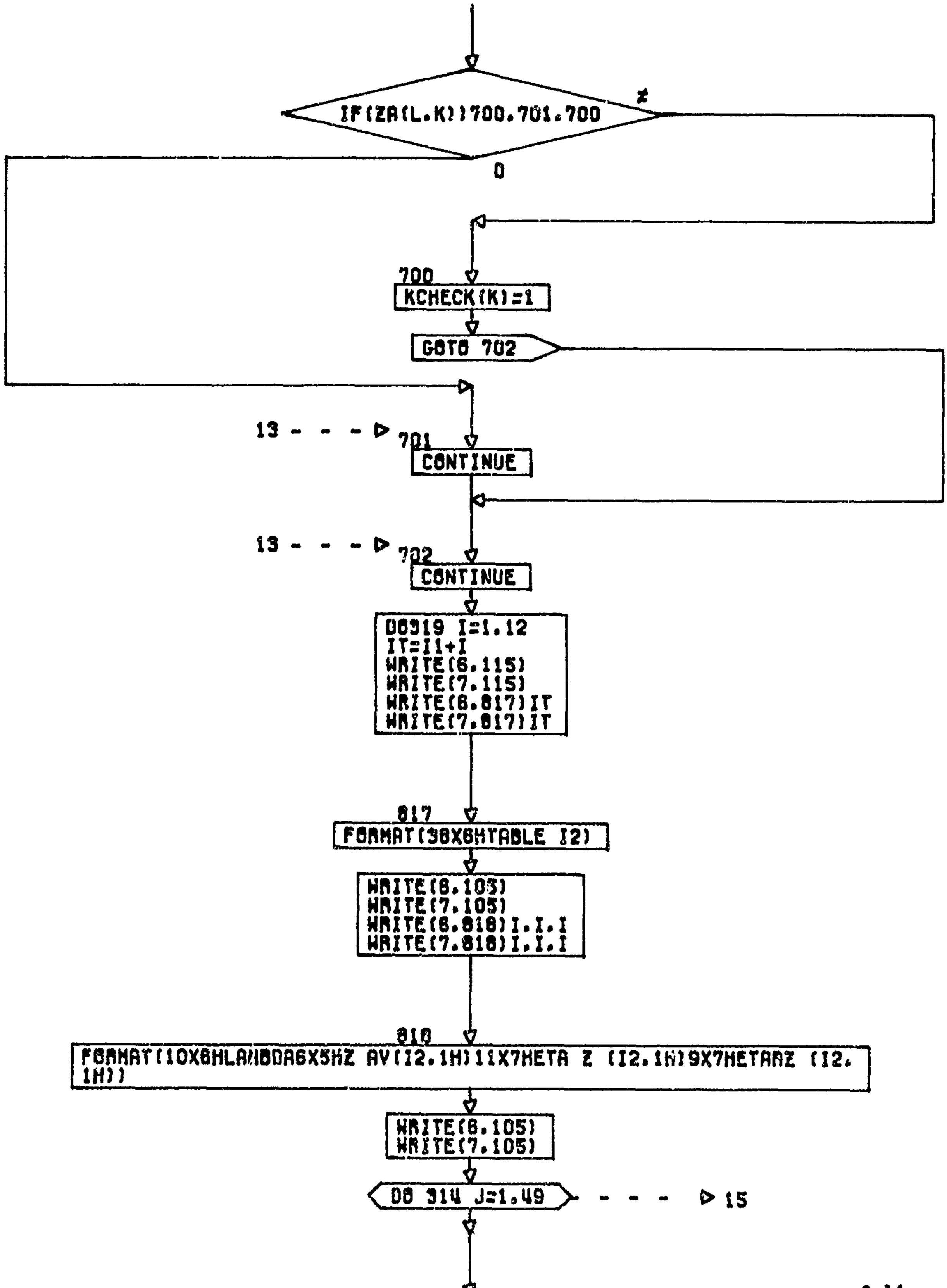
DO 313 I=1,12 - - - ▷ 13
```

CONT. ON PG 13

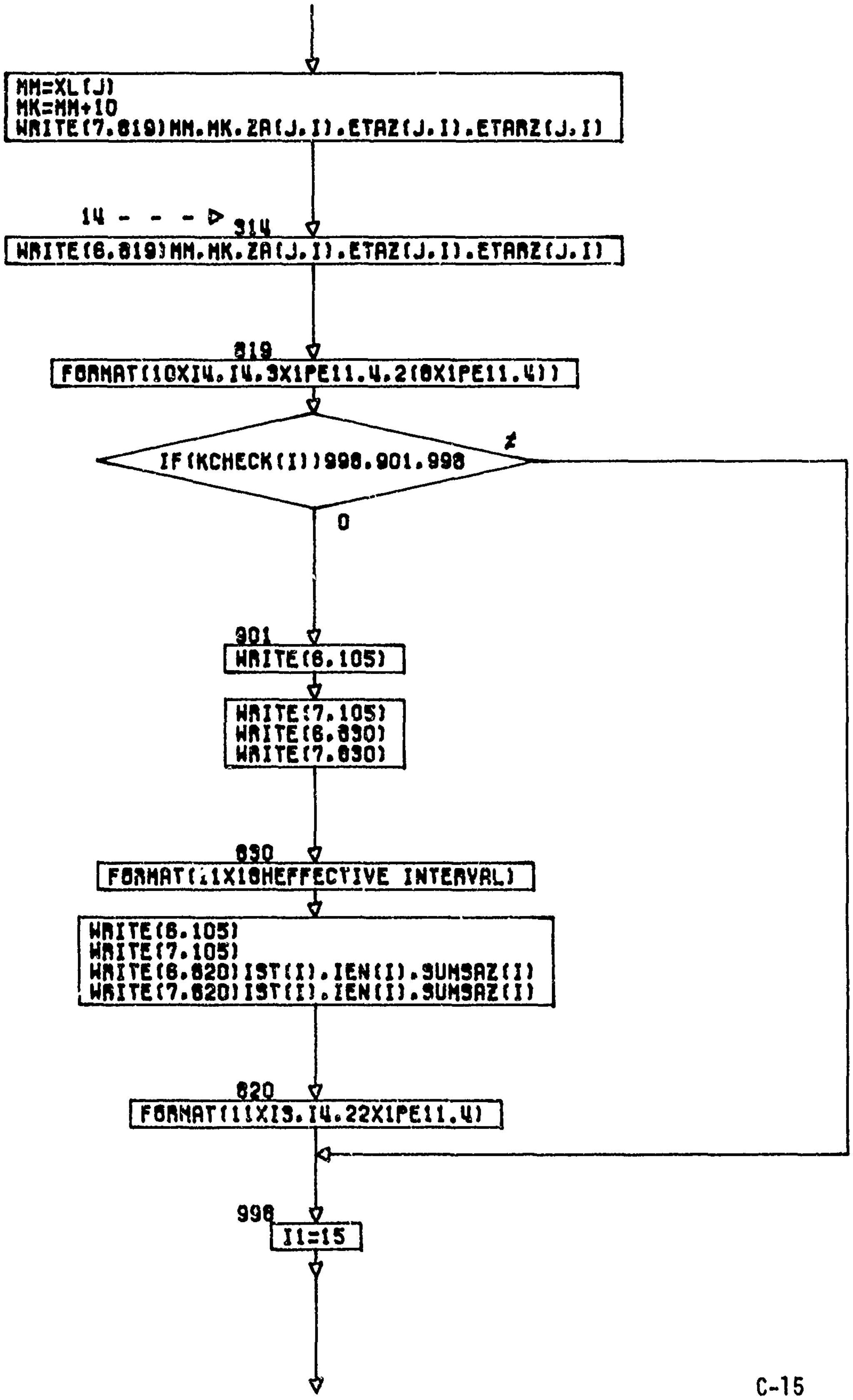


DO 313 J=1.85
C ETAZ=PHOTOCATHODEEFFICIENCY
ETAZ(J.I)=EE(J.I)*ZA(J.I)
C ETARZ=1/ETAZ
ETARZ(J.I)=1./ETAZ(J.I)
SUMEZ(I)=SUMEZ(I)+ETAZ(J.I)
IF(J-49)313.318.313
≠
0
318
SUMSTE(I)=SUMEZ(I)
12
313
CONTINUE
CALL CHECK(ETAZ.PP.IST.XL.IEN)
DO 600 MM=1.12
SUMAZ(MM)=SUMEZ(MM)/PP(MM)
600
SUMSAZ(MM)=SUMSTE(MM)/PP(MM)
I1=15
DO 702 K=1.12
14
C KCHECK IS USED TO SKIP BLANK PAGES OF NONZEROVALUES
KCHECK(K)=0
DO 701 L=50.85
14

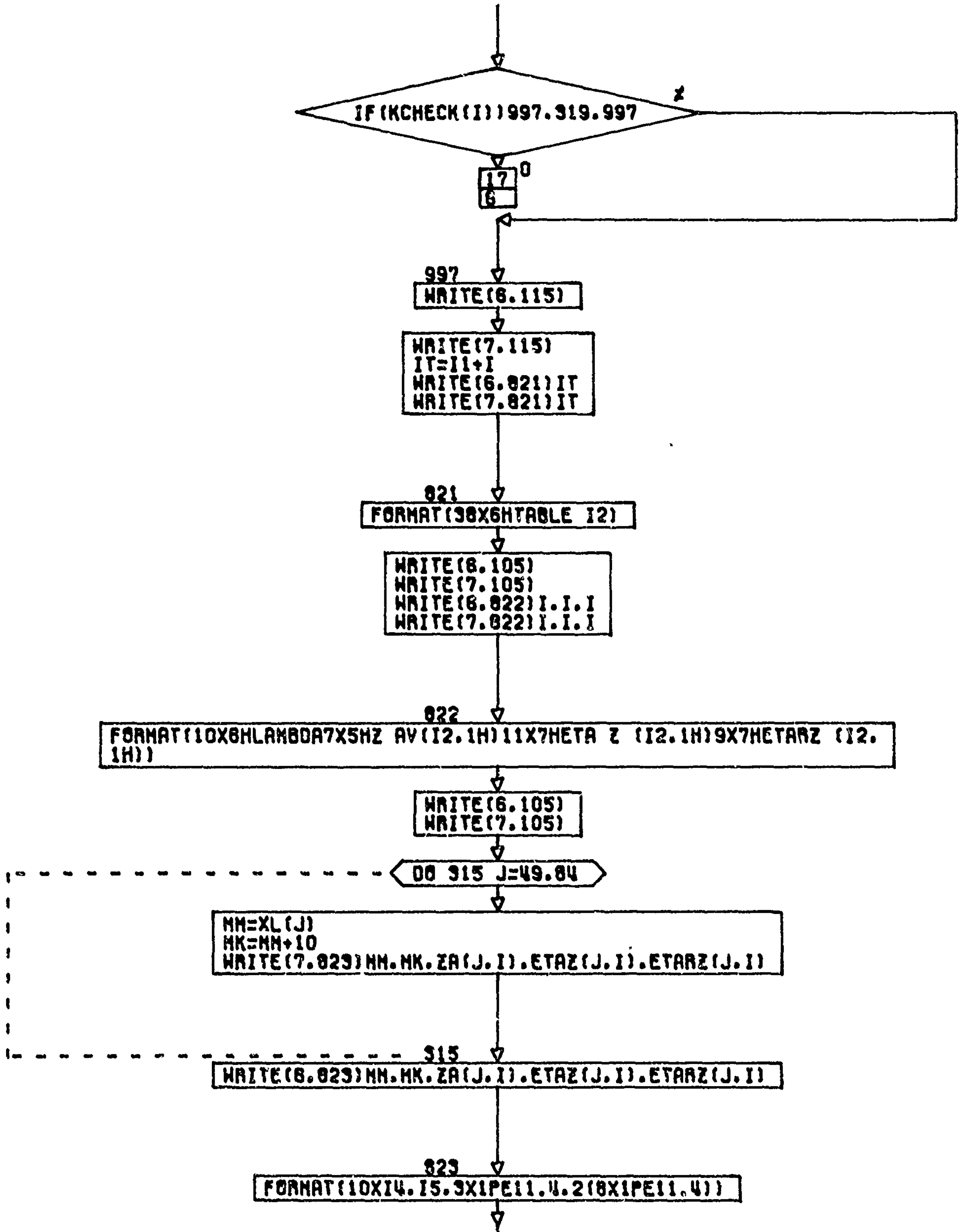
CONT. ON PG 14


IF(ZA(L.K))700.701.700
≠
0
700
KCHECK(K)=1
GOTO 702
13 - - - ▷ 701
CONTINUE
13 - - - ▷ 702
CONTINUE
DO319 I=1.12
IT=I1+I
WRITE(6.115)
WRITE(7.115)
WRITE(6.817)IT
WRITE(7.817)IT
817
FORMAT(38X6HTABLE I2)
WRITE(6.105)
WRITE(7.105)
WRITE(6.818)I.I.I
WRITE(7.818)I.I.I
818
FORMAT(10X6HLAMBDA6X5HZ AV(I2.1H)11X7HETA Z (I2.1H)9X7HETARZ (I2.
1H))
WRITE(6.105)
WRITE(7.105)
DO 314 J=1.49
- - - ▷ 15

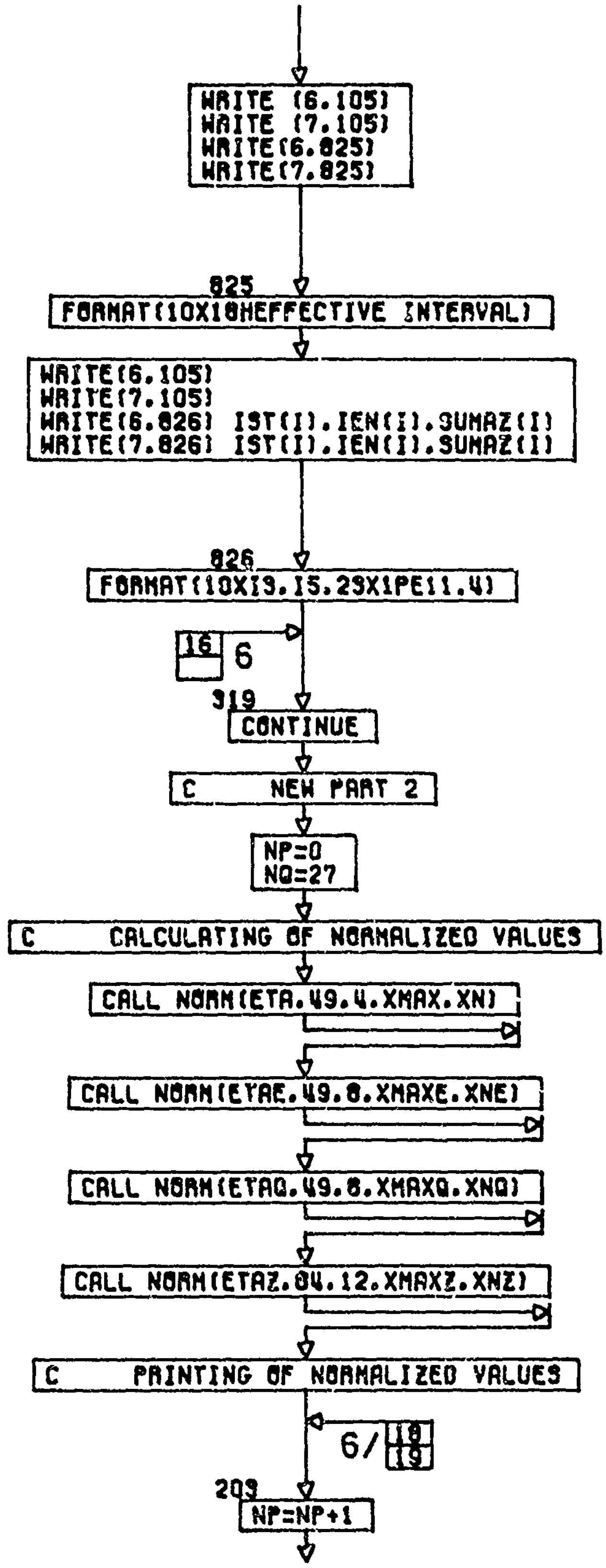
CONT. ON PG 15


MM=XL(J)
MK=MM+10
WRITE(7,819)MM,MK,ZA(J,I),ETAZ(J,I),ETARZ(J,I)
14
314
WRITE(6,819)MM,MK,ZA(J,I),ETAZ(J,I),ETARZ(J,I)
819
FORMAT(10XI4,I4,3X1PE11.4,2(8X1PE11.4))
IF(KCHECK(I))998,901,998
≠
0
901
WRITE(6,105)
WRITE(7,105)
WRITE(6,830)
WRITE(7,830)
830
FORMAT(/1X18HEFFECTIVE INTERVAL)
WRITE(6,105)
WRITE(7,105)
WRITE(6,820)IST(I),IEN(I),SUMSAZ(I)
WRITE(7,820)IST(I),IEN(I),SUMSAZ(I)
820
FORMAT(11XI3,I4,22X1PE11.4)
998
I1=15

CONT. ON PG 16


IF(KCHECK(I))997.319.997
≠
17
0
6
997
WRITE(6.115)
WRITE(7.115)
IT=I1+I
WRITE(6.821)IT
WRITE(7.821)IT
821
FORMAT(38X6HTABLE I2)
WRITE(6.105)
WRITE(7.105)
WRITE(6.822)I.I.I
WRITE(7.822)I.I.I
822
FORMAT(10X6HLAMBDA7X5HZ AV(I2.1H)11X7HETA Z (I2.1H)9X7HETARZ (I2.
1H))
WRITE(6.105)
WRITE(7.105)
DO 315 J=49.84
MM=XL(J)
MK=MM+10
WRITE(7.823)MM.MK.ZA(J.I).ETAZ(J.I).ETARZ(J.I)
315
WRITE(6.823)MM.MK.ZA(J.I).ETAZ(J.I).ETARZ(J.I)
823
FORMAT(10XI4.I5.3X1PE11.4.2(8X1PE11.4))

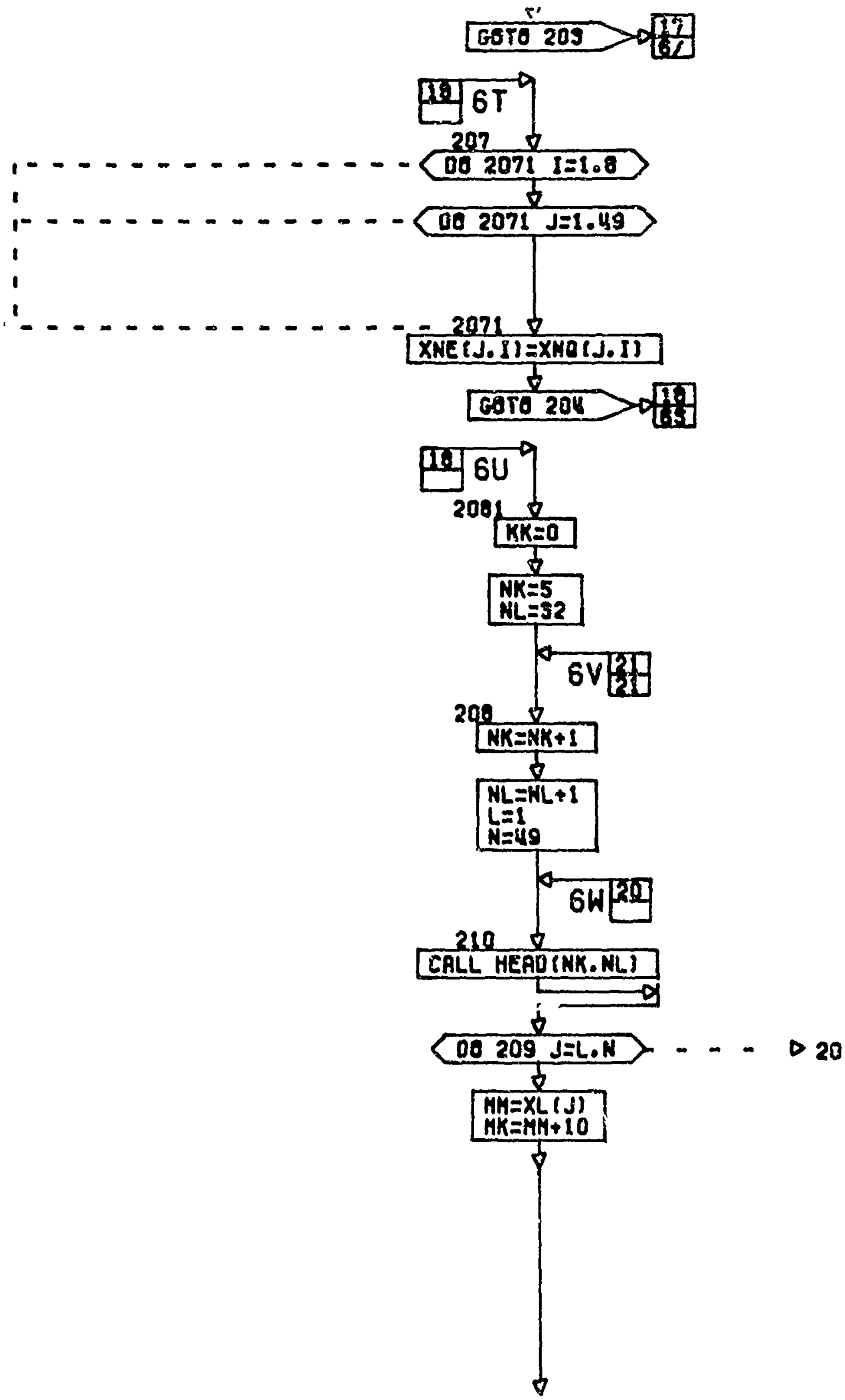
CONT. ON PG 17


WRITE (6.105)
WRITE (7.105)
WRITE(6.825)
WRITE(7.825)
825
FORMAT(10X18HEFFECTIVE INTERVAL)
WRITE(6.105)
WRITE(7.105)
WRITE(6.826) IST(I).IEN(I).SUMAZ(I)
WRITE(7.826) IST(I).IEN(I).SUMAZ(I)
826
FORMAT(10XI3.I5.23X1PE11.4)
16
6
319
CONTINUE
C NEW PART 2
NP=0
NQ=27
C CALCULATING OF NORMALIZED VALUES
CALL NORM(ETA.49.4.XMAX.XN)
CALL NORM(ETAE.49.8.XMAXE.XNE)
CALL NORM(ETAQ.49.8.XMAXQ.XNQ)
CALL NORM(ETAZ.84.12.XMAXZ.XNZ)
C PRINTING OF NORMALIZED VALUES
6/
18
19
203
NP=NP+1

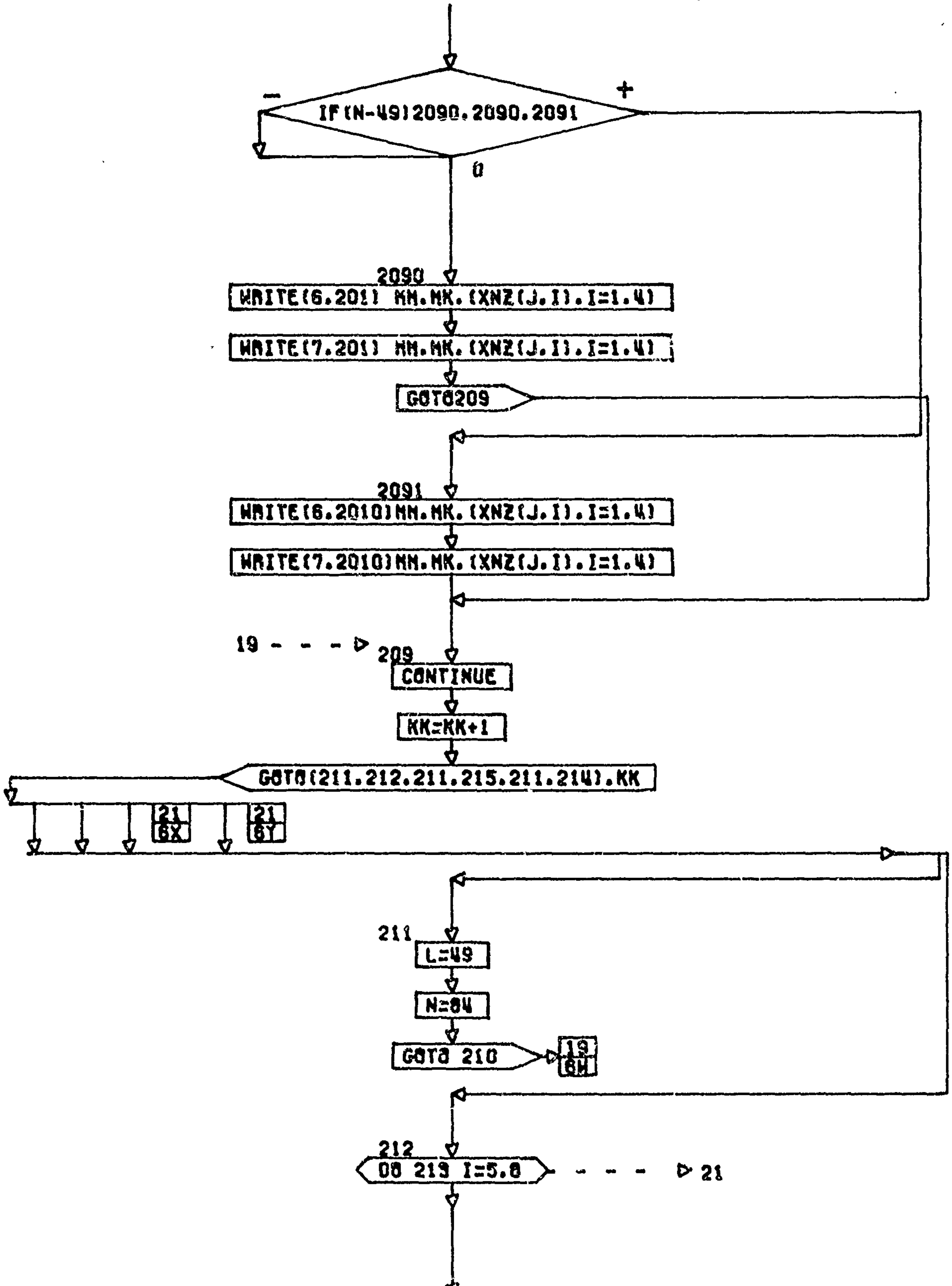
CONT. ON PG 18


NQ=NQ+1
CALL HEAD(NP,NQ)
DO 20 J=1,49
MM=XL(J)
MK=MM+10
WRITE(7,201)MM,MK,(XN(J,I),I=1,4)
20
WRITE(6,201)MM,MK,(XN(J,I),I=1,4)
201
FORMAT(10XI4,I4,6XF6.4,3(8XF6.4))
GOTO(204,205,207,205,2081),NP
19 6T
19 6U
6S 19
204
DO 202 I=1,4
DO 202 J=1,49
202
XN(J,I)=XNE(J,I)
GOTO 203
17 6Z
205
DO 206 I=5,8
DO 206 J=1,49
206
XN(J,I-4)=XNE(J,I)

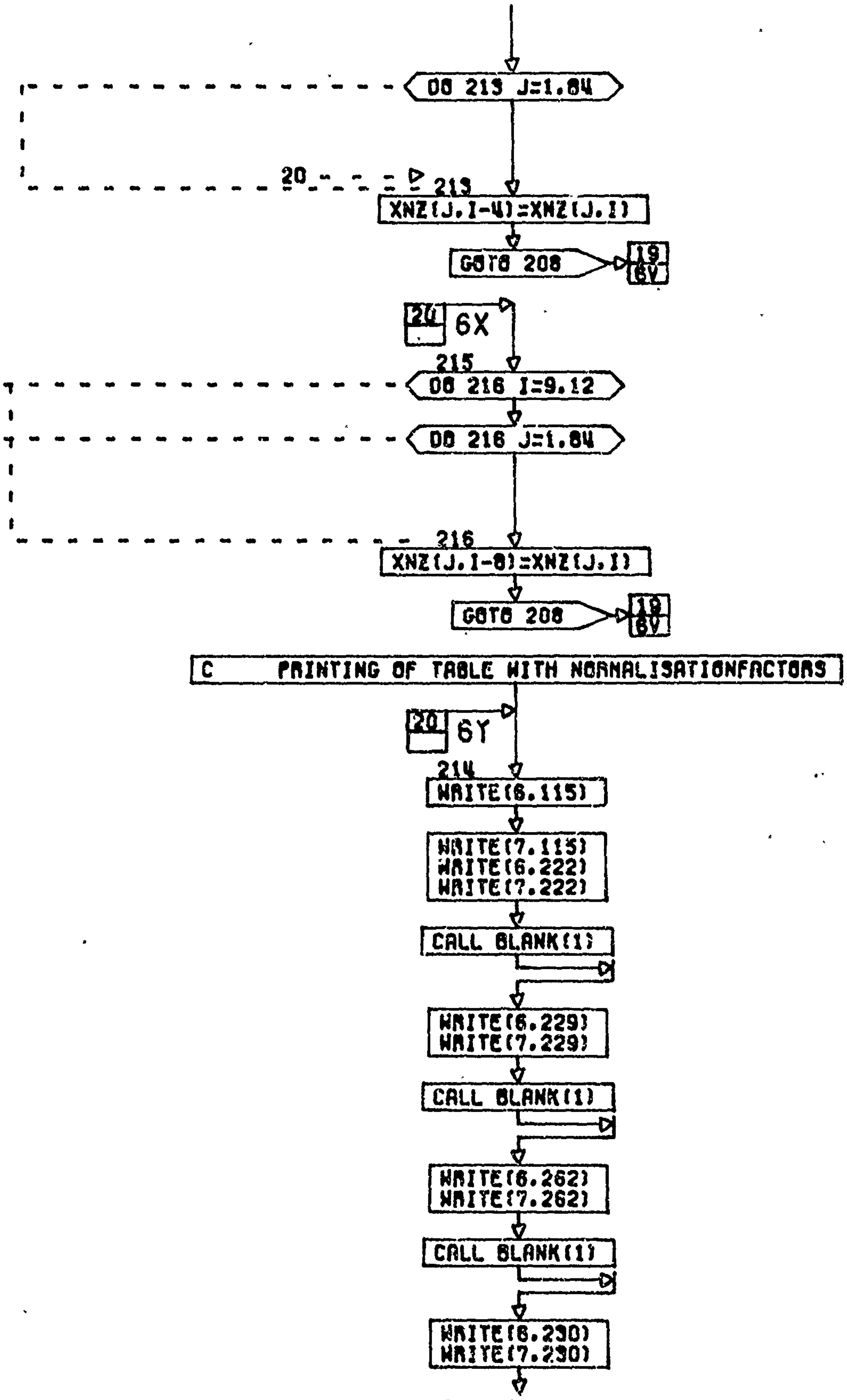
CONT. ON PG 19


GOTO 203
17
6/
18
6T
207
DO 2071 I=1.8
DO 2071 J=1.49
2071
XNE(J.I)=XNO(J.I)
GOTO 204
18
65
18
6U
2081
KK=0
NK=5
NL=32
6V
21
21
208
NK=NK+1
NL=NL+1
L=1
N=49
6W
20
210
CALL HEAD(NK.NL)
DO 209 J=L.N
20
MM=XL(J)
MK=MM+10

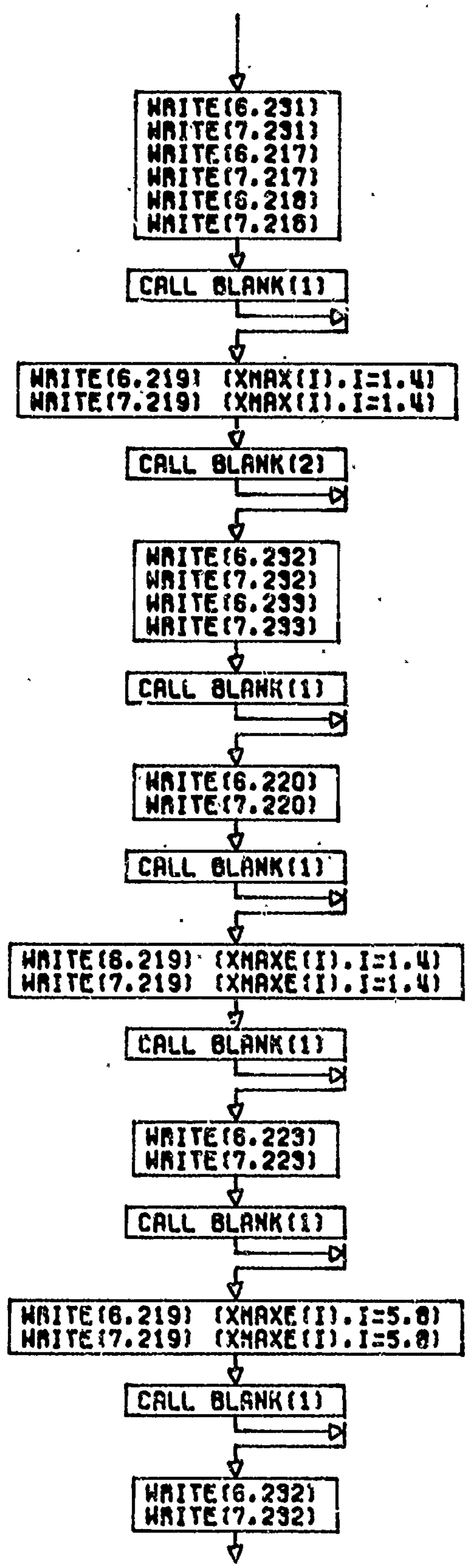
CONT. ON PG 20


IF(N-49)2090,2090,2091
−
+
0
2090
WRITE(6,201) MM,MK,(XNZ(J,I),I=1,4)
WRITE(7,201) MM,MK,(XNZ(J,I),I=1,4)
GOTO209
2091
WRITE(6,2010)MM,MK,(XNZ(J,I),I=1,4)
WRITE(7,2010)MM,MK,(XNZ(J,I),I=1,4)
19
209
CONTINUE
KK=KK+1
GOTO(211,212,211,215,211,214),KK
21
6X
21
6Y
211
L=49
N=64
GOTO 210
19
6M
212
DO 213 I=5,8
21

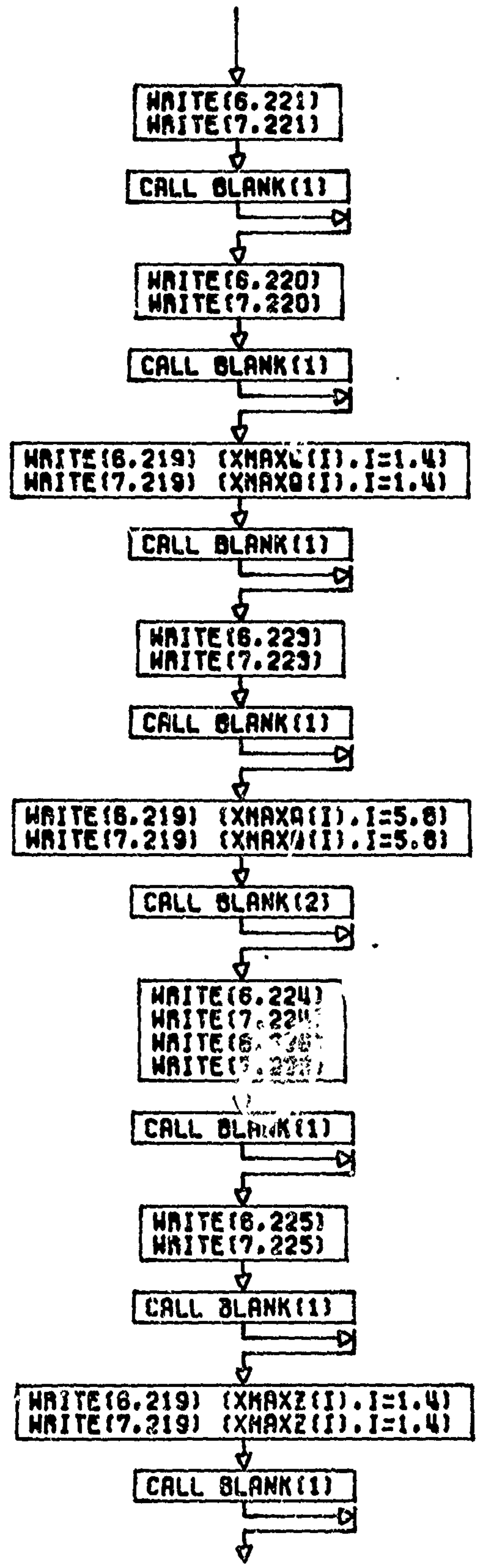
CONT. ON PG 21


DO 213 J=1,84
20
213
XNZ(J,I-4)=XNZ(J,I)
GOTO 208
19
6V
20
6X
215
DO 216 I=9,12
DO 216 J=1,84
216
XNZ(J,I-8)=XNZ(J,I)
GOTO 208
19
6V
C PRINTING OF TABLE WITH NORMALISATIONFACTORS
20
6Y
214
WRITE(6,115)
WRITE(7,115)
WRITE(6,222)
WRITE(7,222)
CALL BLANK(1)
WRITE(6,229)
WRITE(7,229)
CALL BLANK(1)
WRITE(6,262)
WRITE(7,262)
CALL BLANK(1)
WRITE(6,230)
WRITE(7,230)

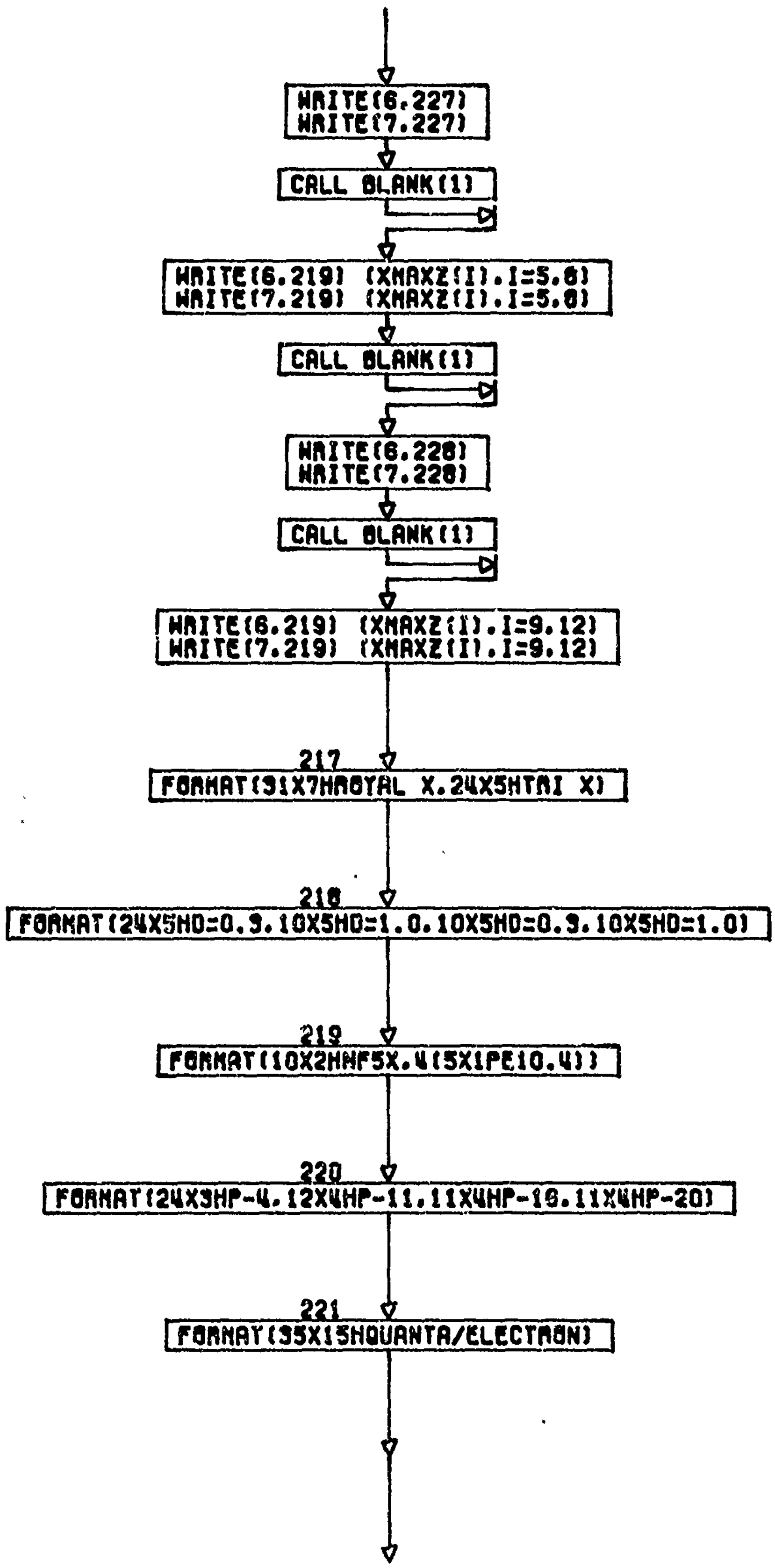
CONT. ON PG 22


WRITE(6.231)
WRITE(7.231)
WRITE(6.217)
WRITE(7.217)
WRITE(6.218)
WRITE(7.218)
CALL BLANK(1)
WRITE(6.219) (XMAX(I).I=1.4)
WRITE(7.219) (XMAX(I).I=1.4)
CALL BLANK(2)
WRITE(6.232)
WRITE(7.232)
WRITE(6.233)
WRITE(7.233)
CALL BLANK(1)
WRITE(6.220)
WRITE(7.220)
CALL BLANK(1)
WRITE(6.219) (XMAXE(I).I=1.4)
WRITE(7.219) (XMAXE(I).I=1.4)
CALL BLANK(1)
WRITE(6.223)
WRITE(7.223)
CALL BLANK(1)
WRITE(6.219) (XMAXE(I).I=5.8)
WRITE(7.219) (XMAXE(I).I=5.8)
CALL BLANK(1)
WRITE(6.232)
WRITE(7.232)

CONT. ON PG 23


WRITE(6,221)
WRITE(7,221)
CALL BLANK(1)
WRITE(6,220)
WRITE(7,220)
CALL BLANK(1)
WRITE(6,219) (XMAXQ(I),I=1,4)
WRITE(7,219) (XMAXQ(I),I=1,4)
CALL BLANK(1)
WRITE(6,223)
WRITE(7,223)
CALL BLANK(1)
WRITE(6,219) (XMAXA(I),I=5,8)
WRITE(7,219) (XMAXA(I),I=5,8)
CALL BLANK(2)
WRITE(6,224)
WRITE(7,224)
WRITE(6,
WRITE(7,
CALL BLANK(1)
WRITE(6,225)
WRITE(7,225)
CALL BLANK(1)
WRITE(6,219) (XMAXZ(I),I=1,4)
WRITE(7,219) (XMAXZ(I),I=1,4)
CALL BLANK(1)

CONT. ON PG 24


WRITE(6.227)
WRITE(7.227)
CALL BLANK(1)
WRITE(6.219) (XMAXZ(I).I=5.8)
WRITE(7.219) (XMAXZ(I).I=5.8)
CALL BLANK(1)
WRITE(6.228)
WRITE(7.228)
CALL BLANK(1)
WRITE(6.219) (XMAXZ(I).I=9.12)
WRITE(7.219) (XMAXZ(I).I=9.12)
217
FORMAT(31X7HROYAL X.24X5HTAI X)
218
FORMAT(24X5HD=0.9.10X5HD=1.0.10X5HD=0.9.10X5HD=1.0)
219
FORMAT(10X2HNF5X.4(5X1PE10.4))
220
FORMAT(24X3HP-4.12X4HP-11.11X4HP-16.11X4HP-20)
221
FORMAT(35X15HQUANTA/ELECTRON)

CONT. ON PG 25

```
222 FORMAT(39X8HTABLE 36)
223 FORMAT(24X5HP-22B,10X5HP-22G,10X5HP-22R,10X4HP-31)
224 FORMAT(36X12HPHOTOCATHODE)
225 FORMAT(24X3HS-1,12X4HS-20,11X5HS-20R,10X4HS-25)
226 FORMAT(34X17HELECTRONS/QUANTUM)
227 FORMAT(24X6HS-25H1, 9X4HVARO,11X3HS-4,12X4HS-11)
228 FORMAT(24X4HS-17,11X6HVARIAN,9X6HS-20IF,9X5HGA AS)
229 FORMAT(30X28HNORMALISATION FACTORS (NF))
230 FORMAT(40X4HFILM)
231 FORMAT(36X14HGRAINS/QUANTUM)
```

CONT. ON PG 26

```
232
FORMAT(38X8HPHOSPHOR)

233
FORMAT(35X15HJOULES/ELECTRON)

234
FORMAT(20X49HSPECTRAL EFFICIENCY OF PHOSPHOR-FILM COMBINATIONS)

280
FORMAT(14X57HSPECTRAL EFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINAT
IONS)

281
FORMAT(10XI4,I4,2X,4(3X1PE11.4))

282
FORMAT(41X3HFOR)

2010
FORMAT(10XI4,I5,6XF6.4,3(8XF6.4))

C      PART 3. COMBINATION PHOSPHOR-FILM, PHOSPHOR-PHOTOCATHODE

CALL COMBI(ETAO,49,8,ETA,49,4,PPP,SPF)

NA=0
KI=9
NN=36

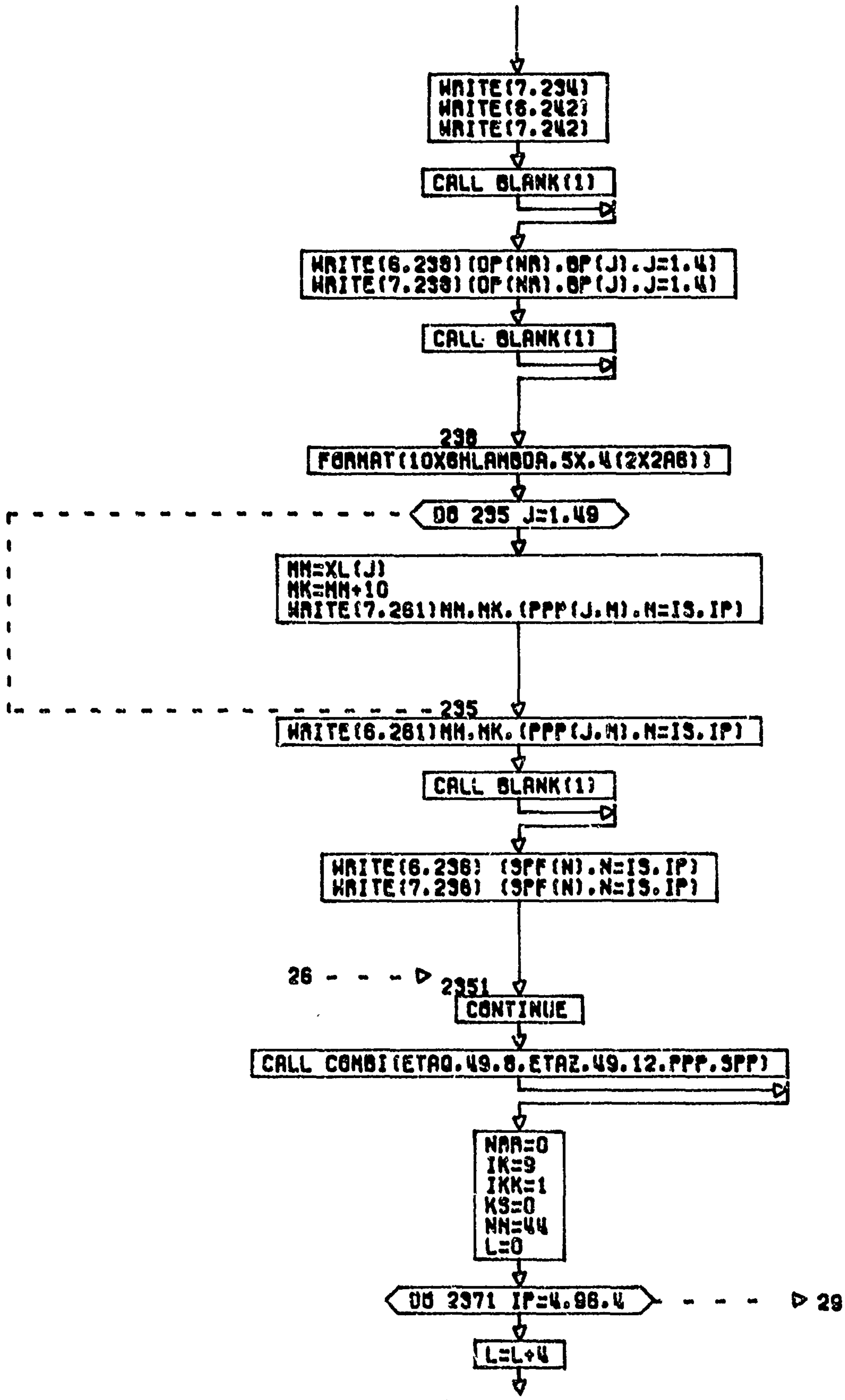
DO 2351 IP=4,32,4          - - - ▷ 27

IS=IP-3
NA=IP/4

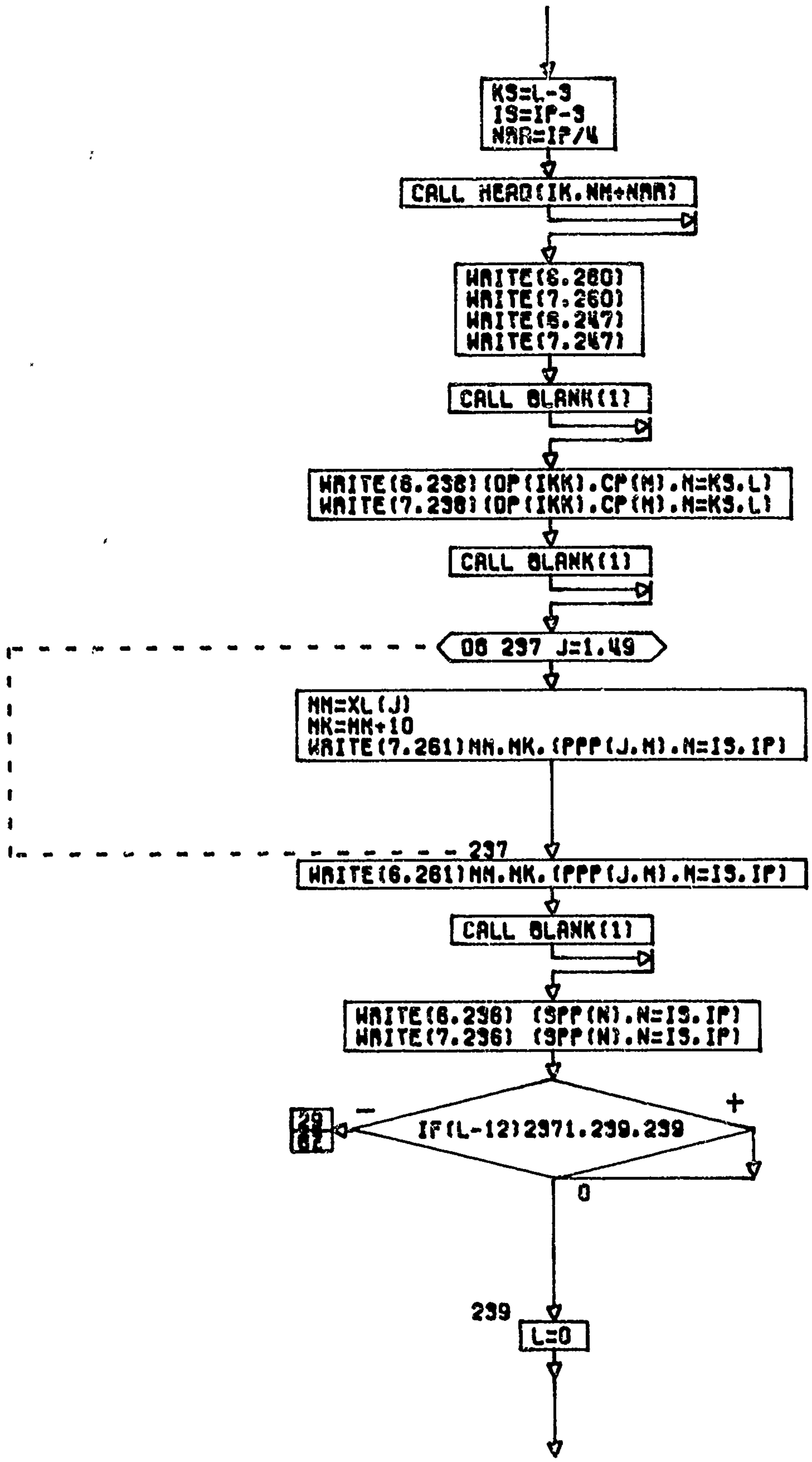
CALL HEAD(KI,NN+NA)

WRITE(6,234)
```

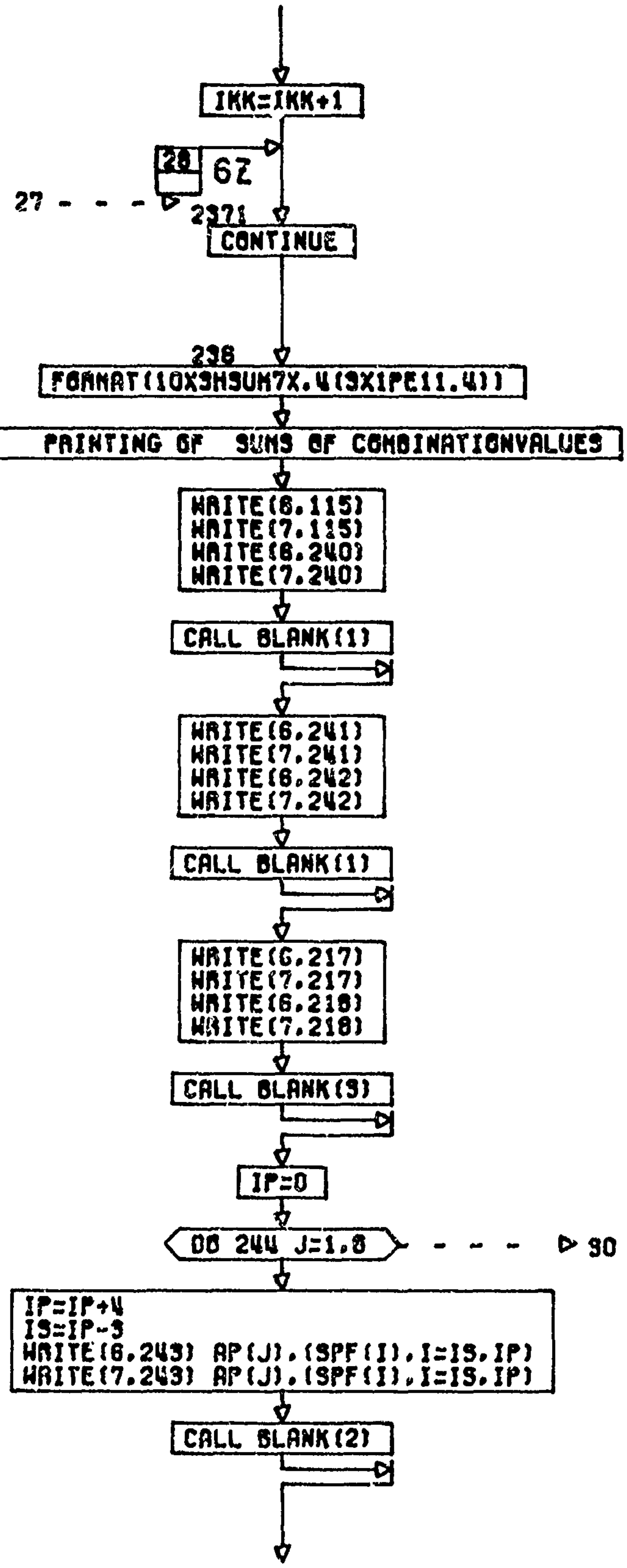
CONT. ON PG 27


WRITE(7.234)
WRITE(6.242)
WRITE(7.242)
CALL BLANK(1)
WRITE(6.238)(OP(NA).BP(J).J=1.4)
WRITE(7.238)(OP(NA).BP(J).J=1.4)
CALL BLANK(1)
238
FORMAT(10X6HLAMBDA.5X.4(2X2A6))
DO 235 J=1.49
MM=XL(J)
MK=MM+10
WRITE(7.261)MM.MK.(PPP(J.M).M=IS.IP)
235
WRITE(6.261)MM.MK.(PPP(J.M).M=IS.IP)
CALL BLANK(1)
WRITE(6.238) (SPF(N).N=IS.IP)
WRITE(7.238) (SPF(N).N=IS.IP)
26
2351
CONTINUE
CALL COMBI(ETAQ.49.8.ETAZ.49.12.PPP.SPF)
NAA=0
IK=9
IKK=1
KS=0
NN=44
L=0
DO 2371 IP=4.96.4
29
L=L+4

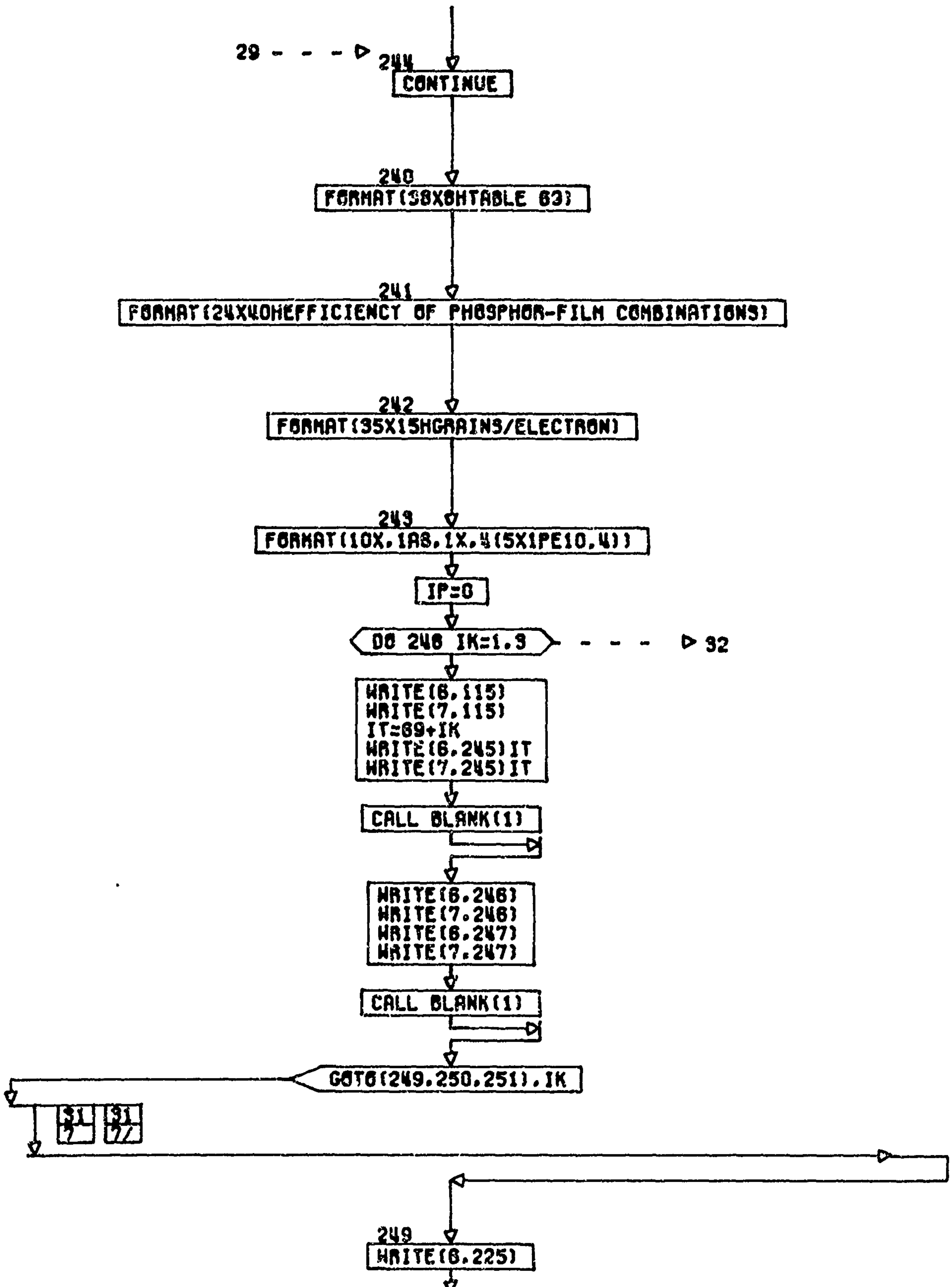
CONT. ON PG 28


KS=L-3
IS=IP-3
NAR=IP/4
CALL HEAD(IK.NM+NAR)
WRITE(6.260)
WRITE(7.260)
WRITE(6.247)
WRITE(7.247)
CALL BLANK(1)
WRITE(6.238)(OP(IKK).CP(M).M=KS.L)
WRITE(7.238)(OP(IKK).CP(M).M=KS.L)
CALL BLANK(1)
DO 237 J=1.49
MM=XL(J)
MK=MM+10
WRITE(7.261)MM.MK.(PPP(J.M).M=IS.IP)
237
WRITE(6.261)MM.MK.(PPP(J.M).M=IS.IP)
CALL BLANK(1)
WRITE(6.236) (SPP(M).M=IS.IP)
WRITE(7.236) (SPP(M).M=IS.IP)
IF(L-12)2371.239.239
−
+
0
239
L=0

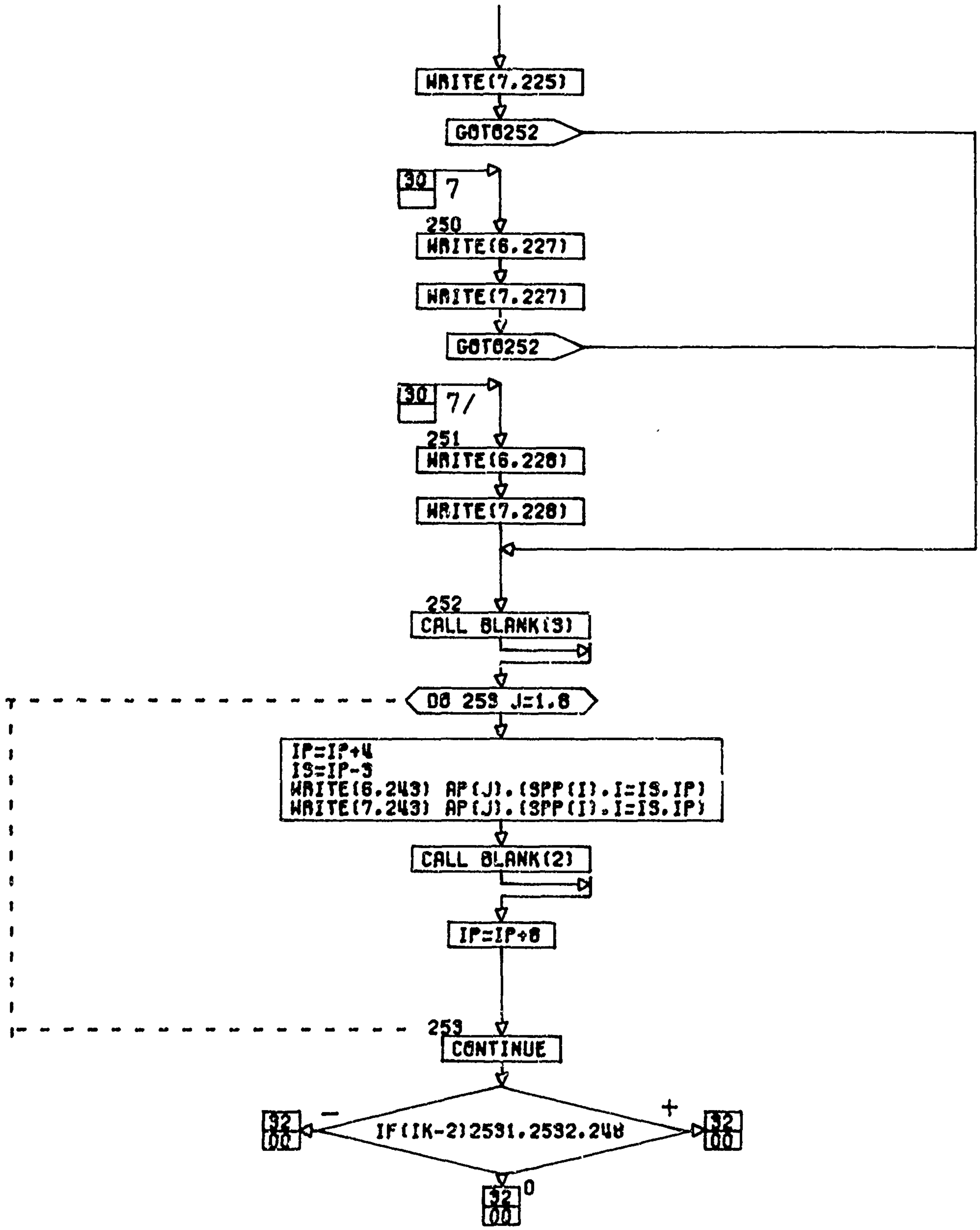
CONT. ON PG 29


IKK=IKK+1
28
6Z
27
2371
CONTINUE
238
FORMAT(10X3HSUM7X,4(3X1PE11.4))
C PRINTING OF SUMS OF COMBINATIONVALUES
WRITE(6,115)
WRITE(7,115)
WRITE(6,240)
WRITE(7,240)
CALL BLANK(1)
WRITE(6,241)
WRITE(7,241)
WRITE(6,242)
WRITE(7,242)
CALL BLANK(1)
WRITE(6,217)
WRITE(7,217)
WRITE(6,218)
WRITE(7,218)
CALL BLANK(3)
IP=0
DO 244 J=1,8
30
IP=IP+4
IS=IP-3
WRITE(6,243) AP(J),(SPF(I),I=IS,IP)
WRITE(7,243) AP(J),(SPF(I),I=IS,IP)
CALL BLANK(2)

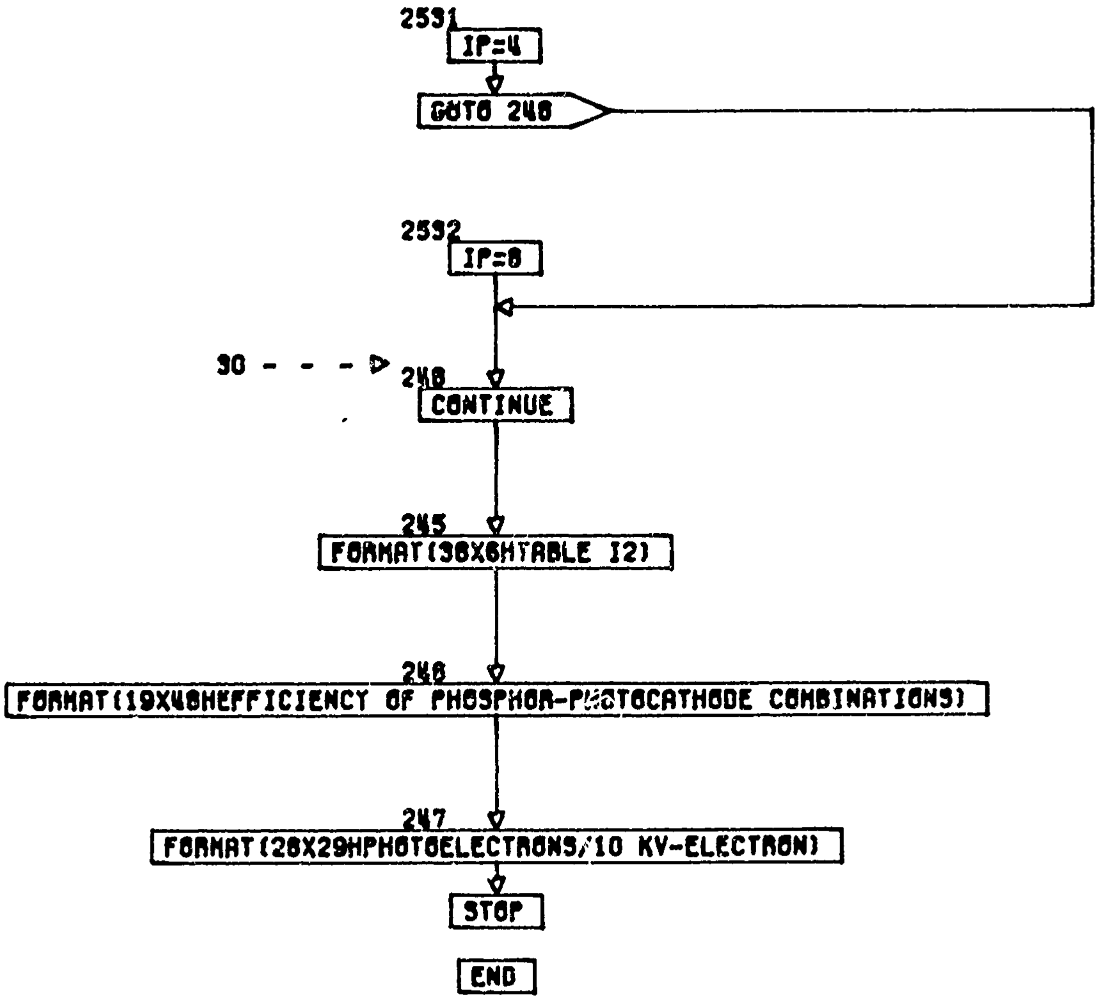
CONT. ON PG 30

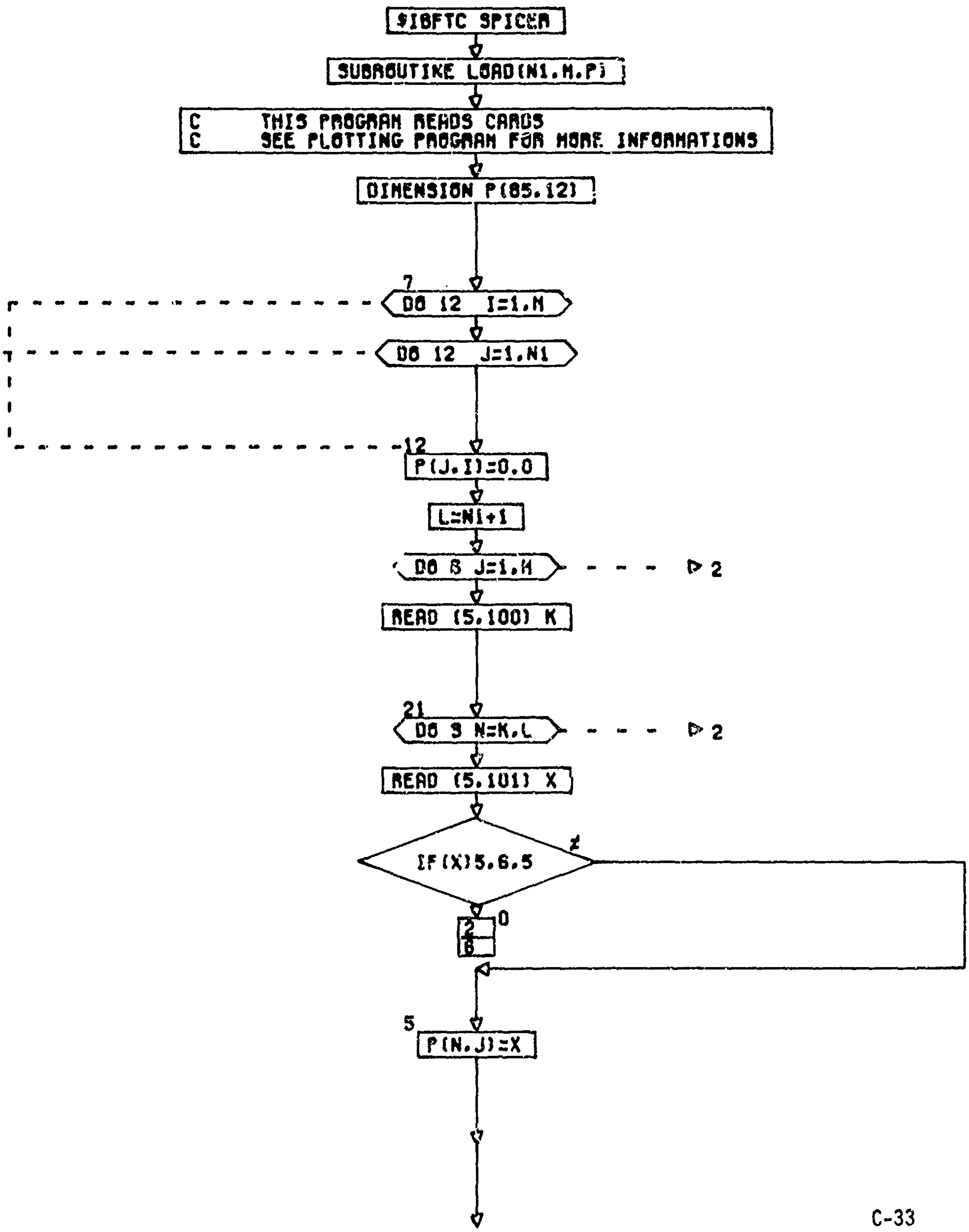

29
244
CONTINUE
240
FORMAT(38X8HTABLE 63)
241
FORMAT(24X40HEFFICIENCY OF PHOSPHOR-FILM COMBINATIONS)
242
FORMAT(35X15HGRAINS/ELECTRON)
243
FORMAT(10X,1A8,1X,4(5X1PE10.4))
IP=0
DO 248 IK=1,3
32
WRITE(6,115)
WRITE(7,115)
IT=69+IK
WRITE(6,245)IT
WRITE(7,245)IT
CALL BLANK(1)
WRITE(6,246)
WRITE(7,246)
WRITE(6,247)
WRITE(7,247)
CALL BLANK(1)
GOTO(249,250,251),IK
31
31
249
WRITE(6,225)

CONT. ON PG 31

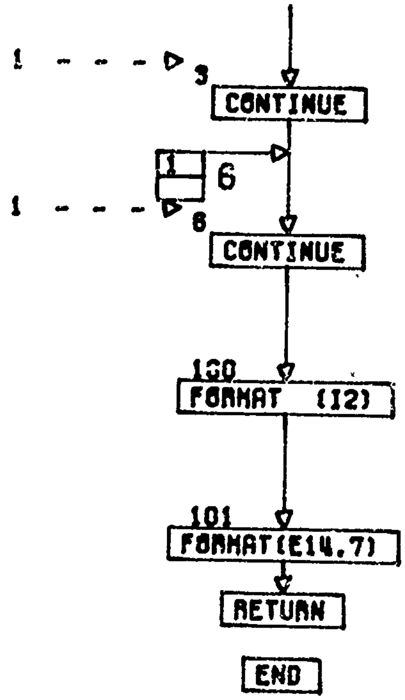

WRITE(7,225)
GOTO252
30
7
250
WRITE(6,227)
WRITE(7,227)
GOTO252
30
7/
251
WRITE(6,228)
WRITE(7,228)
252
CALL BLANK(3)
DO 253 J=1,8
IP=IP+4
IS=IP-3
WRITE(6,243) AP(J),(SPP(I),I=IS,IP)
WRITE(7,243) AP(J),(SPP(I),I=IS,IP)
CALL BLANK(2)
IP=IP+8
253
CONTINUE
IF(IK-2)2531,2532,248
−
+
0
32
00
32
00
32
00

CONT. ON PG 32

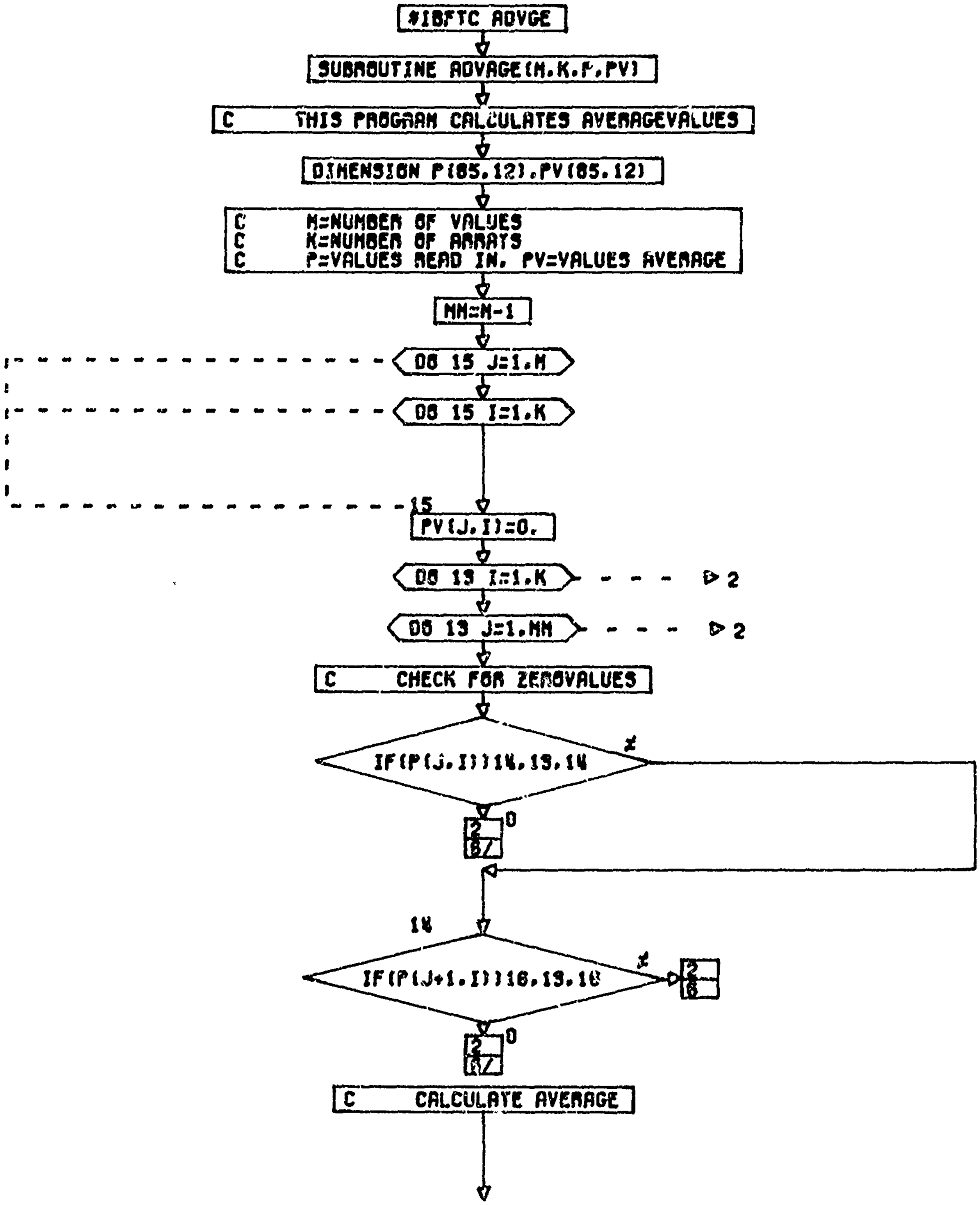

2531
IP=4
GOTO 248
2532
IP=8
30
248
CONTINUE
245
FORMAT(38X6HTABLE I2)
246
FORMAT(19X48HEFFICIENCY OF PHOSPHOR-PHOTOCATHODE COMBINATIONS)
247
FORMAT(28X29HPHOTOELECTRONS/10 KV-ELECTRON)
STOP
END


$IBFTC SPICER
SUBROUTINE LOAD(N1,M,P)
C THIS PROGRAM READS CARDS
C SEE PLOTTING PROGRAM FOR MORE INFORMATIONS
DIMENSION P(85,12)
7
DO 12 I=1,M
DO 12 J=1,N1
12
P(J,I)=0.0
L=N1+1
DO 8 J=1,M
2
READ (5,100) K
21
DO 3 N=K,L
2
READ (5,101) X
IF(X)5,6,5
≠
0
2
6
5
P(N,J)=X

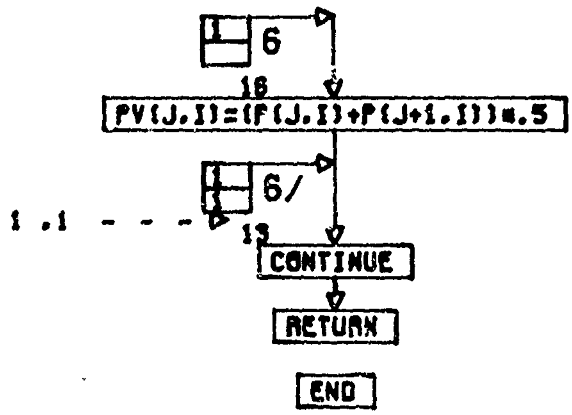
CONT. ON PG 2



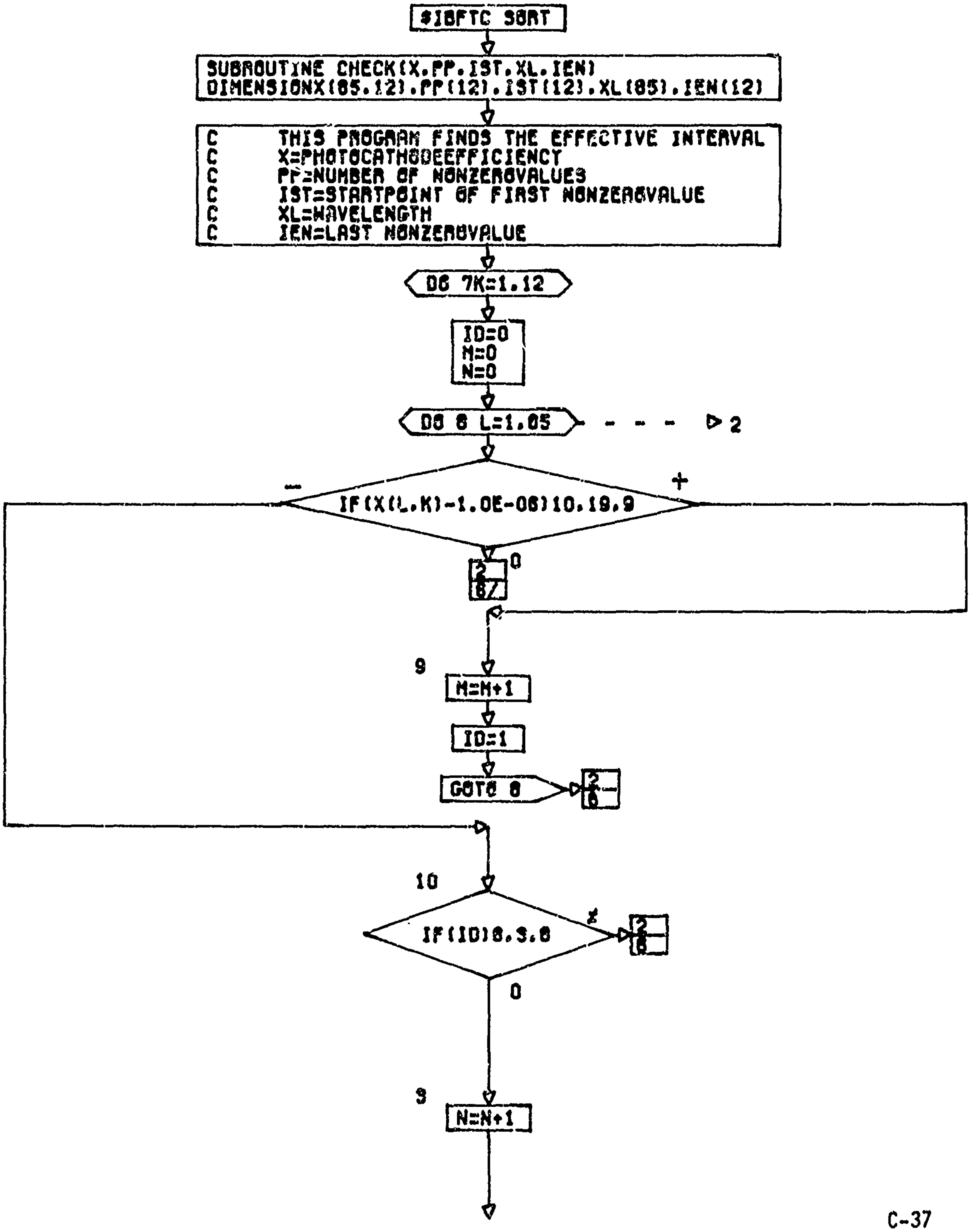
1
3
CONTINUE
1
6
1
6
CONTINUE
100
FORMAT (I2)
101
FORMAT(E14.7)
RETURN
END


$IBFTC ADVGE
SUBROUTINE ADVAGE(M,K,P,PV)
C THIS PROGRAM CALCULATES AVERAGEVALUES
DIMENSION P(85,12),PV(85,12)
C M=NUMBER OF VALUES
C K=NUMBER OF ARRAYS
C P=VALUES READ IN, PV=VALUES AVERAGE
MM=M-1
DO 15 J=1,M
DO 15 I=1,K
15
PV(J,I)=0.
DO 13 I=1,K
2
DO 13 J=1,MM
2
C CHECK FOR ZEROVALUES
IF(P(J,I))14,13,14
≠
0
2
6/
14
IF(P(J+1,I))16,13,16
≠
2
6
0
2
6/
C CALCULATE AVERAGE

CONT. ON PG 2

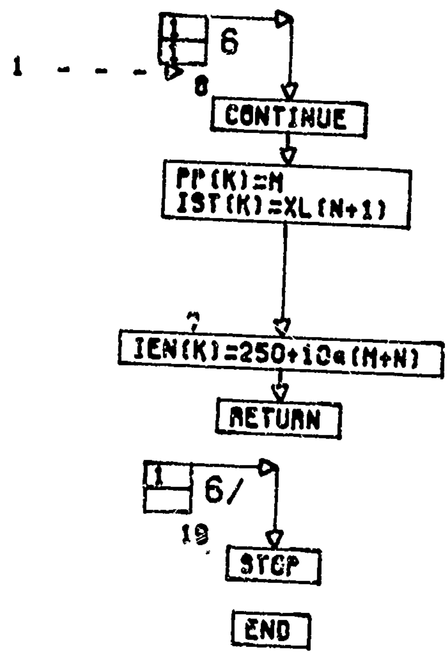


PG 2 FINAL

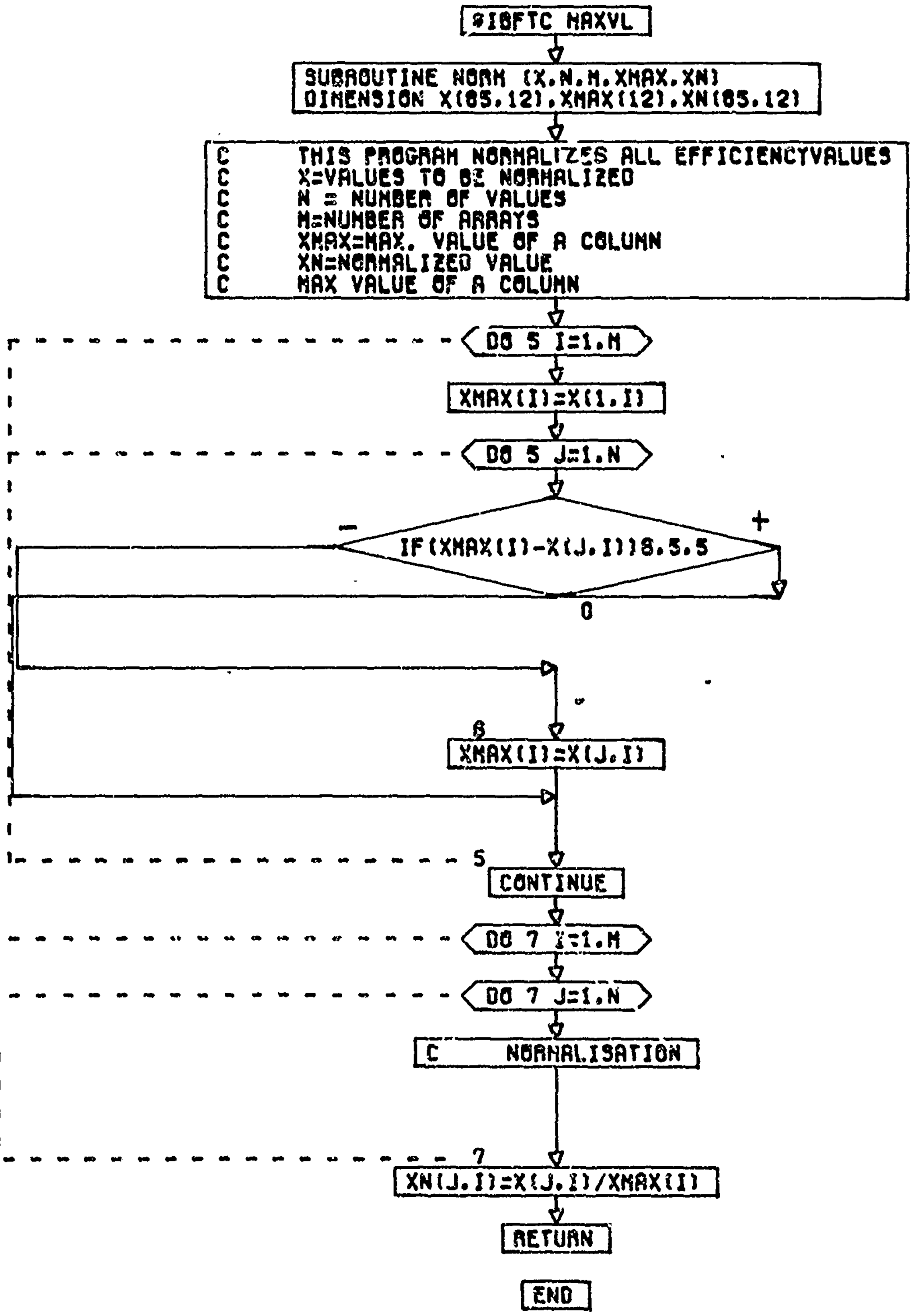


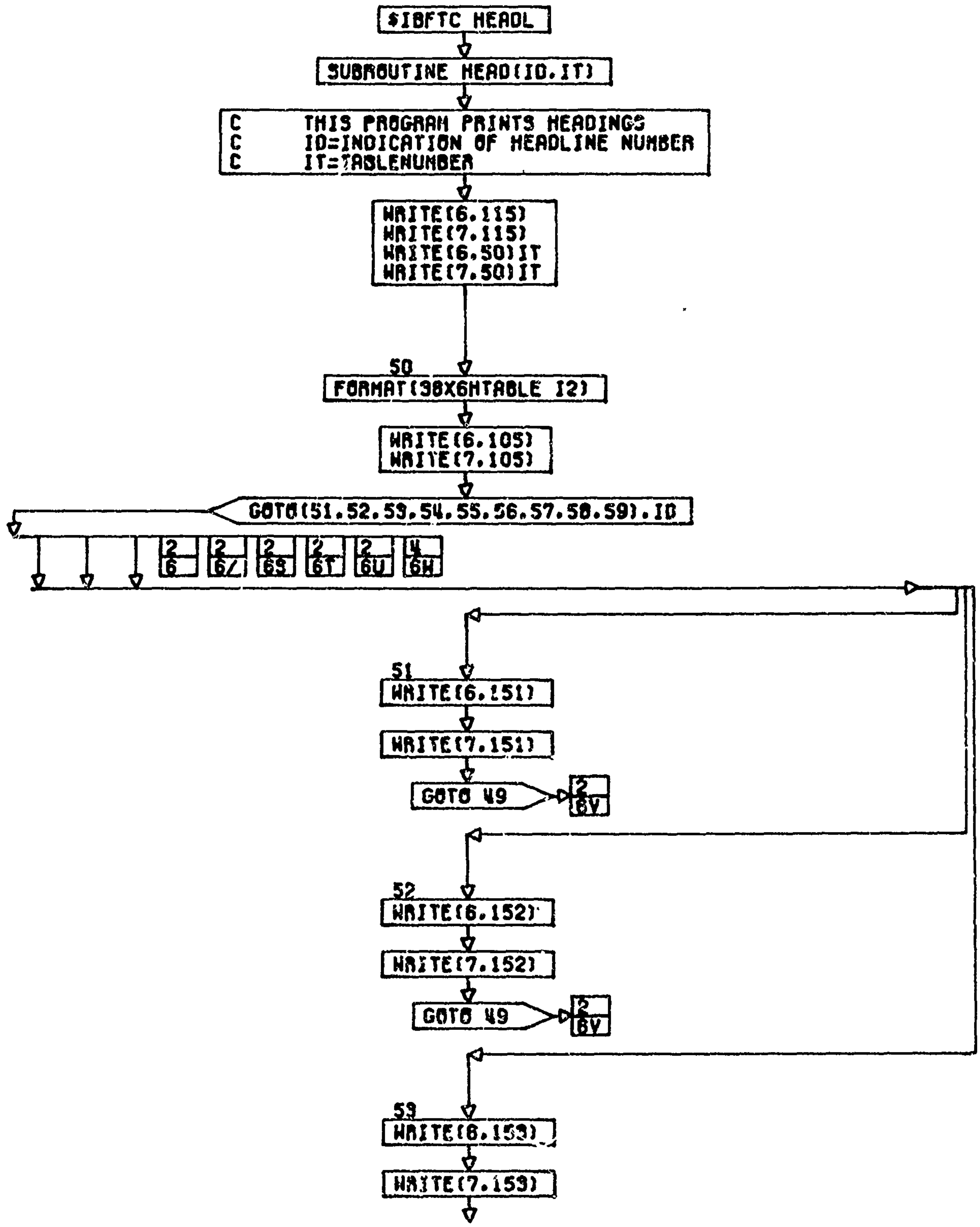
$IBFTC SORT
SUBROUTINE CHECK(X,PP,IST,XL,IEN)
DIMENSIONX(85,12),PP(12),IST(12),XL(85),IEN(12)
C THIS PROGRAM FINDS THE EFFECTIVE INTERVAL
C X=PHOTOCATHODEEFFICIENCY
C PP=NUMBER OF NONZEROVALUES
C IST=STARTPOINT OF FIRST NONZEROVALUE
C XL=WAVELENGTH
C IEN=LAST NONZEROVALUE
DO 7K=1,12
ID=0
M=0
N=0
DO 8 L=1,85
2
IF(X(L,K)-1.0E-06)10,19,9
−
+
0
2
8
9
M=M+1
ID=1
GOTO 8
2
8
10
IF(ID)8,3,8
≠
2
8
0
3
N=N+1

CONT. ON PG 2

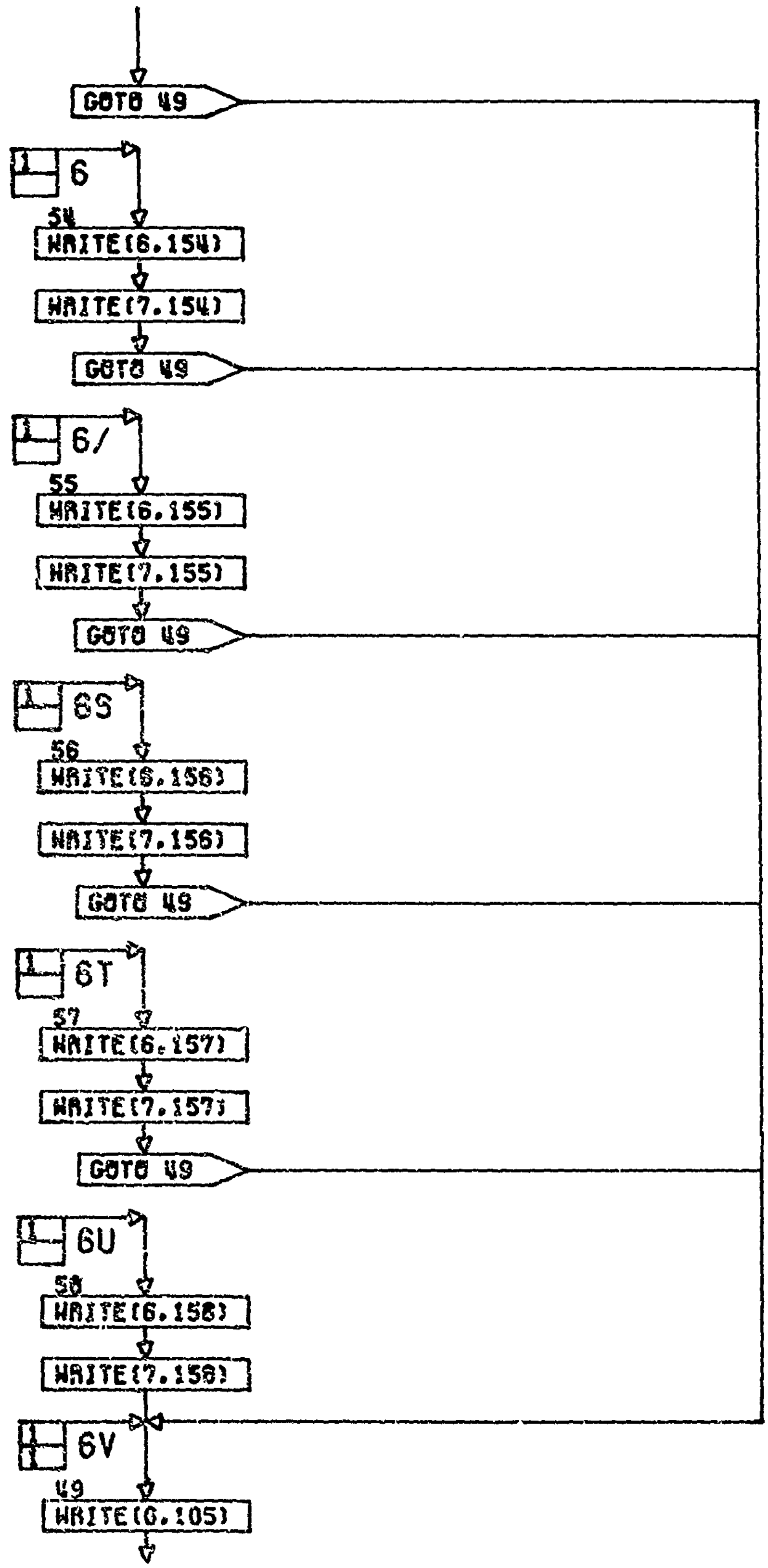


6
1
8
CONTINUE
PP(K)=M
IST(K)=XL(N+1)
7
IEN(K)=250+10*(M+N)
RETURN
6/
19
STOP
END


$IBFTC MAXVL
SUBROUTINE NORM (X,N,M,XMAX,XN)
DIMENSION X(85,12),XMAX(12),XN(85,12)
C THIS PROGRAM NORMALIZES ALL EFFICIENCYVALUES
C X=VALUES TO BE NORMALIZED
C N = NUMBER OF VALUES
C M=NUMBER OF ARRAYS
C XMAX=MAX. VALUE OF A COLUMN
C XN=NORMALIZED VALUE
C MAX VALUE OF A COLUMN
DO 5 I=1,M
XMAX(I)=X(1,I)
DO 5 J=1,N
IF(XMAX(I)-X(J,I))6,5,5
−
+
0
6
XMAX(I)=X(J,I)
5
CONTINUE
DO 7 I=1,M
DO 7 J=1,N
C NORMALISATION
7
XN(J,I)=X(J,I)/XMAX(I)
RETURN
END


$IBFTC HEADL
SUBROUTINE HEAD(ID,IT)
C THIS PROGRAM PRINTS HEADINGS
C ID=INDICATION OF HEADLINE NUMBER
C IT=TABLENUMBER
WRITE(6,115)
WRITE(7,115)
WRITE(6,50)IT
WRITE(7,50)IT
50
FORMAT(38X6HTABLE I2)
WRITE(6,105)
WRITE(7,105)
GOTO(51,52,53,54,55,56,57,58,59),ID
2 6
2 6/
2 6S
2 6T
2 6U
4 6H
51
WRITE(6,151)
WRITE(7,151)
GOTO 49
2 6V
52
WRITE(6,152)
WRITE(7,152)
GOTO 49
2 6V
53
WRITE(6,153)
WRITE(7,153)

CONT. ON PG 2


GOTO 49
1
6
54
WRITE(6.154)
WRITE(7.154)
GOTO 49
1
6/
55
WRITE(6.155)
WRITE(7.155)
GOTO 49
1
6S
56
WRITE(6.156)
WRITE(7.156)
GOTO 49
1
6T
57
WRITE(6.157)
WRITE(7.157)
GOTO 49
1
6U
58
WRITE(6.158)
WRITE(7.158)
1
1
6V
49
WRITE(6.105)

CONT. ON PG 3

```
WRITE(7.105)

105
FORMAT(1H )

115
FORMAT(1H1)

151
FORMAT(10X6HLAMBDA9X6HETAN 1.8X6HETAN 2.8X6HETAN 3.8X6HETAN 4)

152
FORMAT(10X6HLAMBDA9X7HETAEN 1.7X7HETAEN 2.7X7HETAEN 3.7X7HETAEN 4)

153
FORMAT(10X6HLAMBDA9X7HETAEN 5.7X7HETAEN 6.7X7HETAEN 7.7X7HETAEN 8)

154
FORMAT(10X6HLAMBDA9X7HETAON 1.7X7HETAON 2.7X7HETAON 3.7X7HETAON 4)

155
FORMAT(10X6HLAMBDA9X7HETAON 5.7X7HETAON 6.7X7HETAON 7.7X7HETAON 8)

156
FORMAT(10X6HLAMBDA9X7HETAZN 1.7X7HETAZN 2.7X7HETAZN 3.7X7HETAZN 4)

157
FORMAT(10X6HLAMBDA9X7HETAZN 5.7X7HETAZN 6.7X7HETAZN 7.7X7HETAZN 8)
```

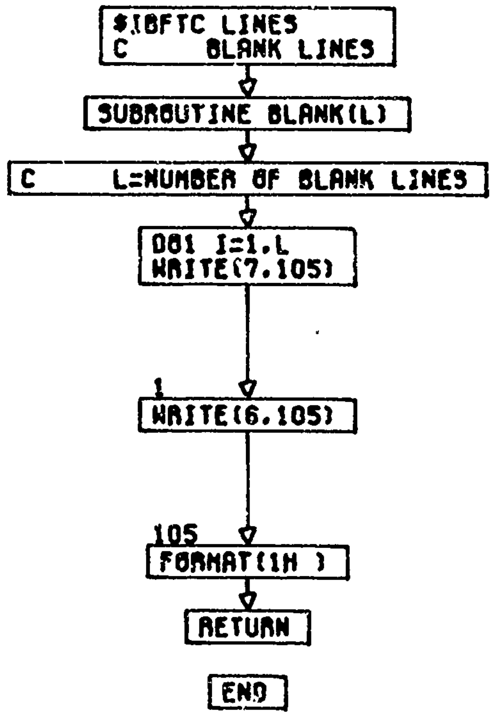
CONT. ON PG 4

```
158
FORMAT(10X6HLAMBDA9X7HETAZN 9.7X6HETAZN 10.6X8HETAZN 11.6X8HETAZN
12)

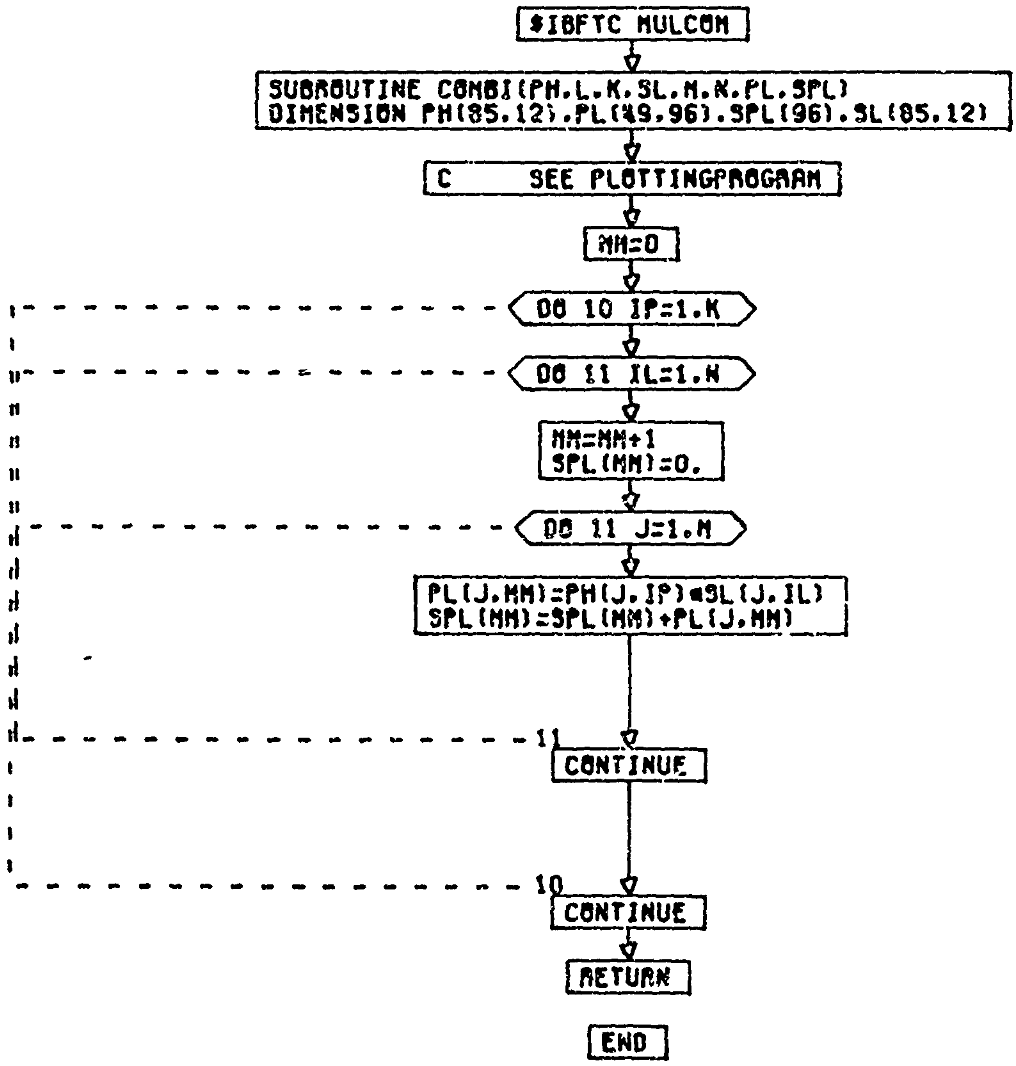
1  6W

59
RETURN

END
```


$IBFTC LINES
C   BLANK LINES
SUBROUTINE BLANK(L)
C   L=NUMBER OF BLANK LINES
DO1 I=1,L
WRITE(7,105)
1
WRITE(6,105)
105
FORMAT(1H)
RETURN
END

PG 1 FINAL


$IBFTC MULCOM
SUBROUTINE COMBI(PH,L,K,SL,M,N,PL,SPL)
DIMENSION PH(85,12),PL(49,96),SPL(96),SL(85,12)
C SEE PLOTTINGPROGRAM
MM=0
DO 10 IP=1,K
DO 11 IL=1,N
MM=MM+1
SPL(MM)=0.
DO 11 J=1,M
PL(J,MM)=PH(J,IP)*SL(J,IL)
SPL(MM)=SPL(MM)+PL(J,MM)
11
CONTINUE
10
CONTINUE
RETURN
END

4. PROGRAM FOR PLOTTING

```
$IBJOB HERMANN MAP
$SETUP A(2)     DISK,860
$IBJOB HERMANN MAP
$IBFTC DRIVER
      DIMENSION XL(87),P(87,96),F(87,12),Z(87,12),EQ(85,1),EE(85,1),B(4)
     *,ETA(87,4),T(12),ETAE(87,8),ETAQ(87,8),ETAZ(87,12),XMAX(4),XMAXE(8
     *),XMAXQ(8),XMAXZ(12),DATA(438),PC(87,12),A(18),BF(16),BP(8),BPC(12
     *),BL(53),BLA(1),ORT3(1),ORT1(16),PP(8)
C     LABELING-DATA FOR Y-AXIS A
      DATA A(1)/106HGRAINS/QUANTUMJOULES/ELECTRONQUANTA/ELECTRONELECTRON
     *S/QUANTUM GRAINS/ELECTRONPHOTOELECTRONS/10 KV ELECTRON/
C     LABELING-DATA FOR INDICATION BF,BP,BPC
      DATA BF(1)/96HKODAK ROYAL-X PAN D=0.3 KODAK ROYAL-X PAN D=1.0 KODA
     *K TRI-X PAN D=0.3   KODAK TRI-X PAN D=1.0    /
      DATA BP(1)/48H  P-4  P-11  P-16  P-20 P-22B P-22G P-22R  P-31 /
      DATA PP(1)/48HP-4   P-11  P-16  P-20  P-22B P-22G P-22R P-31  /
      DATA BPC(1)/72HS-1    S-20  S-20R S-25  S-25HIVARO  S-4   S-11  S-1
     *7  VARIANS-20IFGA AS /
C     LABELING-DATA FOR TITLES BL
      DATA BL(1) /315HSPECTRAL FILM EFFICIENCIESSPECTRAL PHOSPHOR EFFICI
     *ENCIESSPECTRAL PHOTOCATHODE EFFICIENCIESNORMALIZED SPECTRAL FILM E
     *FFICIENCIESNORMALIZED SPECTRAL PHOSPHOR EFFICIENCIESNORMALIZED SPE
     *CTRAL PHOTOCATHODE EFFICIENCIESSPECTRAL RESPONSE OF PHOSPHOR-FILM
     *COMBINATIONSSPECTRAL RESPONSE OF PHOSPHOR-PHOTOCATHODE COMBINATION
     *S/
      DATA BLA(1)/6H      /
C     CALCULATION OF FUNCTIONAL VALUES
      CALL PLOTS(DATA,438)
      CALL PLOT(0.,-2.0,3)
C     DSQ=DIAMETER GRAINSIZE
      DSQ=2.2
      K=0
C     WAVELENGTHADJUSTMENT
      DO 1 J=250,1090,10
      K=K+1
1     XL(K)=J
C     XL(86)PLOTSTART,XL(87)INTERVAL  X-AXIS
      XL(86)=250.
      XL(87)=150.
C     SAVE XL(51) AND XL(52)
      XS=XL(51)
      XM=XL(52)
C     READ DATA F=FILM,PC=PHOSPHOR,Z=PHOTOCATHODE
      CALL LOAD(50,4,F)
      CALL LOAD(50,8,PC)
      CALL LOAD(85,12,Z)
C     EQ-CALCULATING FROM H*C/LAMBDA
      DO 2 J=1,85
      EQ(J,1)=1.986305E-16/XL(J)
C     EQ IN ELECTRON VOLTS IS CALLED EE
2     EE(J,1)=EQ(J,1)/1.6021E-19
C     CALCULATION OF FILM EFFICIENCIES
      B(1)=1.0/(10.0**.15)-1.0/(10.0**.45)
      B(2)=1.0/(10.0**.15)-1.0/(10.0**1.15)
      B(3)=1.0/(10.0**.1)-1.0/(10.0**0.4)
      B(4)=1.0/(10.0**.1)-1.0/(10.0**1.1)
C     CALCULATING OF GRAINSIZE AREA
      AA=4./(3.1415926*DSQ*DSQ)
C     STORE ZEROS
      DO 3 I=1,4
      DO 3 J=1,50
3     ETA(J,I)=0.
```

```
      DO 50 I=1,4
      T(I)=B(I)*1.0E+15
      DO 5 J=1,50
    5 ETA(J,I)=EQ(J,I)*AA*(T(I)/F(J,I))
C     INFORMATION FOR PLOT Y-AXIS
      ETA(51,I)=1.E-05
      ETA(52,I)=.5
   50 CONTINUE
      XL(51)=200.
      XL(52)=100.
C     PLOT FOUR (4) CURVES ON ONE SET AXES END THIS  PLOT
C     PLOTTING OF FILMEFFICIENCIES
C     SEE SUBROUTINE FOR ARGUMENTS
      CALL ELIM(XL,ETA,50,1,BF,4,0.75,1,BLA,BL,26,1,1.,A,14,1,0,0.)
C     CALCULATION OF PHOSPHOR EFFICIENCIES
      DO 7 I=1,8
      DO 7 J=1,50
    7 ETAE(J,I)=0.
      DO 60 I=1,8
      DO 6 J=1,50
      ETAE(J,I)=PC(J,I)*1.6021E-14
    6 ETAQ(J,I)=ETAE(J,I)/EQ(J,I)
      ETAQ(51,I)=1.E-01
      ETAE(51,I)=1.E-19
      ETAE(52,I)=0.375
      ETAQ(52,I)=0.5
   60 CONTINUE
C     PLOTTING OF PHOSPHOR EFFICIENCIES
      CALL ELIM(XL,ETAE,50,8,PP,1,0.75,2,BLA,BL,30,27,1.,A,15,15,0,0.)
C     PLOTTING OF POSPHOREFFICIENCIES IN QUANTA/ELECTRON
      CALL ELIM(XL,ETAQ,50,8,PP,1,0.75,2,BLA,BL,30,27,1.,A,15,30,0,0.)
      XL(51)=XS
      XL(52)=XM
C     CALCULATION OF PHOTOCATHODES EFFICINCIES
      DO 8 I=1,12
      DO 8 J=1,85
    8 FTAZ(J,I)=0.
      DO 90 I=1,12
      DO 9 J=1,85
    9 ETAZ(J,I)=EE(J,I)*Z(J,I)
      ETAZ(86,I)=1.E-04
      ETAZ(87,I)=.5
   90 CONTINUE
C     PLOTTING OF PHOTOCATHODE EFFICIENCIES
      CALL ELIM(XL,ETAZ,85,12,BPC,1,0.75,3,BLA,BL,34,57,1.,A,17,45,0,0.)
C     CALCULATION AND PLOT OF NORMALISED VALUES
      XL(51)=200.
      XL(52)=100.
C     SUBSCRIPTS SEE SUBPROGRAM NORM
      CALL NORM(ETA,50,4,XMAX,Z)
      Z(51,1)=1.E-02
      Z(52,1)=0.375
C     PLOTTING OF NORMALIZED FILMEFFICIENCIES
      CALL ELIM(XL,Z,50,4,BF,4,0.75,1,BLA,BL,37,91,4.,A,1,62,0,0.)
      CALL NORM(ETAE,50,8,XMAXE,F)
      F(51,1)=1.E-03
      F(52,1)=0.5
C     PLOTTING OF NORMALIZED PHOSPHOREFFICIENCIES
      CALL ELIM(XL,F,50,8,PP,1,0.75,2,BLA,BL,41,128,4.,A,1,62,0,0.)
      CALL NORM(ETAQ,50,8,XMAXQ,Z)
      Z(51,1)=1.E-03
      Z(52,1)=0.5
```

```
C      PLOTTING OF NORMALIZED PHOSPHOREFFICIENCIES
       CALL ELIM(XL,Z,50,8,PP,1,0.75,2,BLA,BL 41,128,4.,A,1,62,0,0.)
       XL(51)=XS
       XL(52)=XM
       CALL NORM(ETAZ,85,12,XMAXZ,Z)
       Z(86,1)=1.E-03
       Z(87,1)=0.5
C      PLOTTING OF NORMALIZED PHOTOCATHODE EFFICIENCIES
       CALL ELIM(XL,Z,85,12,BPC,1,0.75,3,BLA,BL,45,169,4.,A,1,62,12,2.5)
       XL(51)=200.
       XL(52)=100.
C      CALCULATION OF COMBINATIONS
       CALL COMBI(ETAQ,50,8,ETA,50,4,P)
       P(51,1)=1.E-04
       P(52,1)=0.5
C      PLOTTING OF COMBINATION PHOSPHOR-FILM
       CALL ELIM(XL,P,50,32,BF,4,1.485,1,BP,BL,47,214,1,,A,15,63,12,2.4)
       CALL COMBI(ETAQ,50,8,ETAZ,50,12,P)
       P(51,1)=1.E-04
       P(52,1)=0.75
C      PLOTTING OF COMBINATION PHOSPHOR - PHOTOCATHODE
       CALL ELIM(XL,P,50,96,BPC,1,1.485,3,BP,BL,55,261,1.,A,29,78,25,1.3)
C      NEW PAGE
       WRITE(6,115)
115    FORMAT(1H1)
C      WRITE CHECK-VALUES
       DO 10 J=1,50
       M=XL(J)
10     WRITE(6,11)M,EQ(J,1),ETA(J,2),ETAE(J,7),P(J,20)
11     FORMAT(5X13,4(3X1PE11.4))
       CALL PLOTE
       STOP
       END
```

```
$IBFTC SPICER
C      THIS PROGRAM READS CARDS
       SUBROUTINE LOAD(N1,M,P)
C      N1=NUMBER OF CARDS
C      M=NUMBER OF ARRAYS
C      P=NAMEINDICATION
       DIMENSION P(87,12)
C      SET ZEROS
7      DO 12  I=1,M
       DO 12  J=1,N1
12     P(J,I)=0.0
C      L IS USED WHEN MAX. NUMBER OF CARDS ARE READ IN
       L=N1+1
       DO 6 J=1,M
C      K INDICATES STARTPOINT OF NONZEROVALUES
       READ (5,100) K
21     DO 3 N=K,L
C      READ VALUES X,STORE X IN P,STARTING IN K
       READ (5,101) X
       IF(X)5,6,5
5      P(N,J)=X
3      CONTINUE
6      CONTINUE
100    FORMAT  (I2)
101    FORMAT(E14.7)
       RETURN
       END
```

```
$IBFTC MAXVL
      SUBROUTINE NORM (X,N,M,XMAX,XN)
C     THIS PROGRAM FINDS MAX. VALUE OF AN ARRAY AND DIVIDES ALL VALUES
C     OF THIS ARRAY WITH ITS MAX. VALUE
      DIMENSION X(87,12),XMAX(12),XN(87,12)
C     X=EFFICIENCY-VALUE, N=NUMBER OF VALUES, M= NUMBER OF ARRAYS,
C     XMAX=MAX.VALUE OF AN ARRAY, XN=NORMALIZED VALUE
C     MAX VALUE OF A COLUMN
      DO 5 I=1,M
      XMAX(I)=X(1,I)
      DO 5 J=1,N
      IF(XMAX(I)-X(J,I))6,5,5
6     XMAX(I)=X(J,I)
5     CONTINUE
C     NORMALIZE VALUES BY XMAX
      DO 7 I=1,M
      DO 7 J=1,N
7     XN(J,I)=X(J,I)/XMAX(I)
      RETURN
      END
```

```
$IBFTC MULCOM
C      THIS PROGRAM CALCULATES COMBINATIONS BETWEEN TWO KINDS OF VALUES
       SUBROUTINE COMBI(PH,L,K,SL,M,N,PL)
C      PH=PHOSPHORVALUES
C      L=NUMBER OF THESE VALUES
C      K=NUMBER OF PHOSPHORARRAYS
C      SL=NUMBER OF FILM OR PHOTOCATHODE VALUES
C      M=NUMBER OF THESE VALUES
C      N=NUMBER OF ARRAYOF PHOTOCATHODES
C      PL=COMBINATION VALUE
       DIMENSION PH(87,8),PL(87,96),SL(87,12)
C      MM=NUMBER OF ARRAYS OF COMBINATION VALUES
       MM=0
       DO 10 IP=1,K
       DO 11 IL=1,N
       MM=MM+1
       DO 11 J=1,M
C      CALCULATE COMBINATIONS
       PL(J,MM)=PH(J,IP)*SL(J,IL)
11     CONTINUE
10     CONTINUE
       RETURN
       END
```

```
$IBFTC ELIMIN
C     THIS PROGRAM DOES THE MAINPLOTTING. VALUES TO BE PLOTTED ARE
C     PREPARED. ZEROVALUES ARE ELIMINATED.
      SUBROUTINE ELIM(XL,ETA,M,L,ORT1,NB,XMO,KS,ORTO,H,NH,NHS,AB,W,NY,NS
     *Y,ITP,PITP)
C     XL=WAVELENGTH,VALUE FOR X-AXIS
C     ETA= EFFICIENCY VALUE FOR Y-AXIS
C     M=VALUES OF ONE ARRAY
C     L=INDICATION OF NUMBER OF ARRAYS
C     ORT1=LABELING OF FILMNAMES
C     NB=INDICATION FOR NUMBER OF LETTERS
C     XMO PLOTSTART FOR ORT1
C     KS=REPEATRATE
C     ORTO=BLANKS OR PHOSPHORNAMES
C     H=HEADLINE
C     NH=NUMBER OF HEADLINELETTERS
C     NHS=STARTLETTER IN HEADLINESTATEMENT
C     AB=ARROWHEAD START
C     W=DATADIMENSION  FOR HPLOT
C     NY=NUMBER OF LETTERS FOR W
C     NSY=STARTLETTER IN W-STATEMENT
C     ITP=INDICATION IF OR IF NOT TWO HEADING LINES
C     PITP=STARTPOINT FOR SECOND HEADING LINE
      DIMENSION XL(87),ETA(87,96),Y(87),X(87),ORT2(12),ORTO(8),H(53),W(1
     *8),ORT3(1),ORT1(16),PH(10)
C     KP=INDICATOR FOR NUMBER OF FILMARRAYS
      KP=0
C     N=STARTPOINT FOR ORTO
      N=1
C     NL=NUMBER OF LETTERS OF ORT1
      NL=NB*6
      DO 4 IB=1,L,4
      IE=IB+3
      DO 3 I=IB,IE
C     K=INDICATES NUMBER OF NONZEROVALUES
      K=0
      DO 2 J=1,M
C     ELIMINATING OF NONZEROVALUES
      IF(ETA(J,I)-ETA(M+1,1))2,2,1
    1 K=K+1
    2 CONTINUE
C     INDICATION LABELING X- AND Y-AXIS
      X(K)=XL(J)
      Y(K)=ETA(J,I)
      Y(K+1)=ETA(M+1,1)
      Y(K+2)=ETA(M+2,1)
      X(K+1)=XL(M+1)
      X(K+2)=XL(M+2)
C     CALLING FOR PLOTTING AXIS
      CALL HPLOT(X,Y,K,I,IB,AB,W,NY,NSY)
    3 CONTINUE
      KP=KP+1
C     DECISION IF FILM OR PHOSPHOR NAMES OR BOTH
      IF(XMO-0.75)8,8,7
C     PLOTTING OF PHOSPHORNAMES
    7 V=1.072
      NFP=6*N-5
      DO 6 I=1,4
C     MOVEF=MOVE FIELD. MOVES HERE N=6 SYMBOLS OF LOCATION ORTO.
C     STARTING POINT NFP TO LOCATION ORT3, STARTING POINT 1.
      CALL MOVEF(6,ORTO,NFP,ORT3,1)
      CALL SYMBOL(0.75,V,.105,ORT3,0.,6)
```

```
C       THIS PROGRAM IN SYSTEMLIBRARY OF COMPUTER
C       SUBP. SYMBOL = CALCOMP PROGRAM: 1. ARGUMENT STARTPOINT X-DIRECTION
C       V=STARTPOINT Y-DIRECTION. 3. ARGUMENT LETTERHEIGHT.
C       4. ARGUMENT TEXT TO BE PLOTTED. 5. ARGUMENT ANGLE OF LETTERS TO Y
C       LAST ARGUMENT = NUMBER OF LETTERS OR SYMBOLS
6       V=V-0.2
C       PLOTTING OF FILM PHOSPHOR OR PHOTOCATHODE NAMES
8       V=1.072
        KKP=4*KP
        KSP=KKP-3
        DO 5 I=KSP,KKP
        NF1=1+((I-1)*NL)
        CALL MOVEF(NL,ORT1,NF1,ORT2,1)
        CALL SYMBOL(XMO,V,.105,ORT2,0.,NL)
5       V=V-0.2
C       DECISION IF ONE OR TWO LINES FOR HEADING
        IF(ITP)11,11,12
12      NHD=NH-ITP
        CALL MOVEF(NHD,H,NHS,PH,1)
        CALL SYMBOL(1.125,-1.18,.125,PH,0.,NHD)
        NNHS=NHS+NHD
        CALL MOVEF(ITP,H,NNHS,PH,1)
        CALL SYMBOL(PITP,-1.4,.125,PH,0.,ITP)
        GOTO 13
C       SECOND LINE
11      CALL MOVEF(NH,H,NHS,PH,1)
        CALL SYMBOL(1.125,-1.18,.125,PH,0.,NH)
C       START NEW PAGE
13      CALL PLOT(10.,0.,-3)
C       REPEATDECISION FOR PHOSPHORNAMES
        IF(KP-KS)4,9,10
9       KP=0
        N=N+1
    4   CONTINUE
C       RETURN TO MAINPROGRAM
10      RETURN
        END
```

```
$IBFTC SPLOT
      SUBROUTINE HPLOT(X,PX,K,I,KK,AA,YT,NYT,NSYT)
C     THIS PROGRAM PLOTS AXIS-FRAME
C     X=WAVELENGTH X-AXIS
C     PX=Y-VALUES TO BE PLOTTED
C     K=NUMBER OF NONZEROVALUES
C     I=NUMBER OF ARRAYS
C     KK=ARRAYSINDICATION
C     OTHER ARGUMENTS SEE SUBP. LABLE
      DIMENSION X(87),PX(87),YT(18)
      L=I-KK
      IF(L)1,1,5
C     PLOTTING OF LOWER X-AXIS
    1 CALL HAXIS(0.,0.,6.,-1.,.143,X(K+1),X(K+2))
C     PLOTTING OF LEFT Y-AXIS
      CALL LGAXIS(0.,0.,1H ,1,8., 90.,PX(K+1),PX(K+2))
C     PLOTTING OF RIGHT Y-AXIS
      CALL SLAXIS(6.,0.,1H ,+1,8.,90.,PX(K+1),PX(K+2))
C     PLOTTING OF UPPER X-AXIS
      CALL HAXIS(0.,8.,6.,0.,.143,X(K+1),X(K+2))
    5 CONTINUE
C     PREPARING OF VALUES FOR PLOTTING
      CALL LGLINE(X,PX,K,5,L,2)
      IF(L-3)8,7,8
    7 CALL LABLE(AA,YT,NYT,NSYT)
    8 CONTINUE
      RETURN
      END
```

```
$IBFTC ACHSE
C       THIS PROGRAM PLOTS X-AXIS
        SUBROUTINE HAXIS(A,B,Z,L,U,XI,DA)
C       A,B STARTINGCOORDINATES
C       Z= INTERVALS ON X-AXIS
C       L= ANNOTATION(-1), NO ANNOTATION(0)
C       U=CENTERING OF NUMBERS IN RELATION TO TIC-MARK
C       XI=STARTNUMBER
C       DA=INTERVALVALUE
        CALL PLOT(A,B,3)
        IF=Z+1.
        N=XI
        IA=DA
        BB=B-.345
        DO 1 I=1,IF
        DI=I-1
        XN=A+DI
C       PLOT ANNOTATIONMARKS
        CALL PLOT(XN,B,2)
        CALL PLOT(XN,B-.125,2)
        W=N
C       CHANGE OF CENTERVALUE
        IF(N-1000)9,10,10
10      U=.207
    9   CONTINUE
C       ANNOTATION FOR LOWER, NO ANNOTATION FOR UPPER AXIS
        IF(L)11,12,11
   11   CALL NUMBER(XN-U,BB,.115,W,0.,-1)
C       PLOTTING OF INTERVALANNOTATIONMARKS
   12 N=N+IA
        IF(I-7)7,2,7
7       IF(150.-DA)4,4,3
4       STI=0.1667
        NL=5
        GOTO 6
3       STI=0.2
        NL=4
6       ST=XN
        DO 5 J=1,NL
        ST=ST+STI
        CALL PLOT(ST,B,3)
        CALL PLOT(ST,B-0.07,2)
5       CONTINUE
2       CALL PLOT(XN,B,3)
    1   CONTINUE
        RETURN
        END
```

```
$IBFTC PFEIL
C       THIS PROGRAM PLOTS SMALL NM, LAMBDA , ARROWHEADS, AUTHORS AND
C       INDICATION OF CURVES
        SUBROUTINE LABLE(AS,Y,NY,NSY)
C       AS= ARROWHEAD START
C       Y=Y-AXIS DIMENSIONS
C       NY=NUMBER OF LETTERS OF DIMENSIONS
C       NSY=STARTLETTER OF DIMENSIONS
        DIMENSION Y(18),PY(5)
C       PLOT ARROWHEAD X-AXIS
        CALL PLOT(2.,-0.6,3)
        CALL PLOT(2.75,-0.6,2)
        CALL AROHD(3.25,-0.6,4.75,-.6,0.2,0.08,16)
C       PLOT SMALL N
        XN=5.0
C       XN AND YN STARTPOINT FOR SMALL N
        YN=-0.55
        BN=YN+0.075
C       PLOT BRACKETS
        CALL PLOT(XN-0.02,BN,3)
        CALL PLOT(XN-0.05,BN,2)
        CALL PLOT(XN-0.05,BN-0.2,2)
        CALL PLOT(XN-0.02,BN-0.2,2)
        CALL PLOT(XN,YN,3)
        CALL PLOT(XN,YN-0.1,2)
        CALL PLOT(XN,YN-0.01,3)
        CALL PLOT(XN+0.02,YN,2)
        CALL PLOT(XN+0.04,YN,2)
        CALL PLOT(XN+0.06,YN-0.01,2)
        CALL PLOT(XN+0.06,YN-0.1,2)
C       PLOT SMALL M
C       XM=STARTPOINT OF SMALL M
        XM=XN+0.1
        CALL PLOT(XM,YN,3)
        CALL PLOT(XM,YN-0.1,2)
        CALL PLOT(XM,YN-0.01,3)
        CALL PLOT(XM+0.02,YN,2)
        CALL PLOT(XM+0.04,YN,2)
        CALL PLOT(XM+0.06,YN-0.01,2)
        CALL PLOT(XM+0.06,YN-0.1,2)
        CALL PLOT(XM+0.06,YN-0.01,3)
        CALL PLOT(XM+0.08,YN,2)
        CALL PLOT(XM+0.1,YN,2)
        CALL PLOT(XM+0.12,YN-0.01,2)
        CALL PLOT(XM+0.12,YN-0.1,2)
C       PLOT BRACKETS
        XB=XN+0.24
        CALL PLOT(XB,BN,3)
        CALL PLOT(XB+0.03,BN,2)
        CALL PLOT(XB+0.03,BN-0.2,2)
        CALL PLOT(XB,BN-0.2,2)
C       PLOT LAMBDA
        XW=3.0
        YW=-0.58
        CALL PLOT(XW-0.0394,YW+0.0787,3)
        CALL PLOT(XW-0.0345,YW+0.0758,2)
        CALL PLOT(XW-0.0295,YW+0.0709,2)
        CALL PLOT(XW-0.0246,YW+0.0650,2)
        CALL PLOT(XW-0.0217,YW+0.0591,2)
        CALL PLOT(XW+0.0177,YW-0.0472,2)
        CALL PLOT(XW+0.0246,YW-0.0580,2)
        CALL PLOT(XW+0.0315,YW-0.0593,2)
```

```
      CALL PLOT(XW+0.0394,YW-0.0738,2)
      CALL PLOT(XW+0.0472,YW-0.0787,2)
      CALL PLOT(XW,YW,3)
      CALL PLOT(XW-0.0394,YW-0.0787,2)
C     PLOT ARROWHEAD Y-AXIS
      CALL PLOT(-0.6,AS,3)
      ALE=AS+0.75
      CALL PLOT(-0.6,ALE,2)
      ALS=AS+1.25
      AT=AS+2.75
      CALL AROHD(-0.6,ALS,-0.6,AT,0.2,0.08,16)
      WS=AT+0.45
C     PLOT  DIMENSIONS ON Y-AXIS
      CALL MOVEF(NY,Y,NSY,PY,1)
      CALL SYMBOL(-.537,WS,.125,PY,90.,NY)
C     PLOT AUTHORS
      CALL SYMBOL(1.25,8.5,.07,50HR. GEBEL, H. SPIEGEL, H. MESTWERDT AND
     * R. HAYSLETT,0.,50)
      CALL SYMBOL(2.00,8.3,.07,30HINTENSIFIER MATCHING PROBLEMS.,0.,30)
      V=1.125
      DO 1 I=1,4
      IS=I-1
C     LABEL INDICATION OF CURVES
      CALL SYMBOL(0.5,V,.105,IS,0.,-1)
1     V=V-0.2
C     LABEL TITLE
      CALL SYMBOL(0.,-1.18,.125,8HFIG.     ,0.,8)
      CALL SYMBOL(5.75,0.25,.06,2HHS,0.,2)
      RETURN
      END
```

```
$IBFTC DRIVER

DIMENSION XL(87).P(87.98).F(87.12).Z(87.12).EQ(85.1).EE(85.1).B(4)
.ETA(87.4).T(12).ETAE(87.8).ETAQ(87.8).ETAZ(87.12).XMAX(4).XMAXE(8
).XMAXQ(8).XMAXZ(12).DATA(430).PC(87.12).A(18).BF(16).BP(9).BPC(12
).BL(53).BLA(1).ORT3(1).ORT1(16).PF(8)

C     LABELING-DATA FOR Y-AXIS A

DATA A(1)/108HGRAINS/QUANTUMJOULES/ELECTRONQUANTA/ELECTRONELECTRON
S/QUANTUM GRAINS/ELECTRONPHOTOELECTRONS/10 KV ELECTRON/

C     LABELING-DATA FOR INDICATION BF.BP.BPC

DATA BF(1)/96HKODAK ROYAL-X PAN D=0.3 KODAK ROYAL-X PAN D=1.0 KODA
K TRI-X PAN D=0.3   KODAK TRI-X PAN D=1.0   /

DATA BP(1)/48H  P-4   P-11   P-16   P-20 P-22B P-22G P-22R  P-31 /
DATA PP(1)/48HP-4   P-11   P-16   P-20   P-22B P-22G P-22R P-31  /

DATA BPC(1)/72HS-1    S-20  S-20R S-25  S-25H1VARO  S-4   S-11  S-1
7  VARIANS-20INGA AS /

C     LABELING-DATA FOR TITLES BL

DATA BL(1) /315HSPECTRAL FILM EFFICIENCIESSPECTRAL PHOSPHOR EFFICI
ENCIESSPECTRAL PHOTOCATHODE EFFICIENCIESNORMALIZED SPECTRAL FILM E
FFICIENCIESNORMALIZED SPECTRAL PHOSPHOR EFFICIENCIESNORMALIZED SPE
CTRAL PHOTOCATHODE EFFICIENCIESSPECTRAL RESPONSE OF PHOSPHOR-FILM
COMBINATIONSSPECTRAL RESPONSE OF PHOSPHOR-PHOTOCATHODE COMBINATION
S/

DATA BLA(1)/8H        /

C     CALCULATION OF FUNCTIONAL VALUES

CALL PLOTS(DATA.430)

CALL PLOT(0..-2.0.3)

C     DSQ=DIAMETER GRAINSIZE

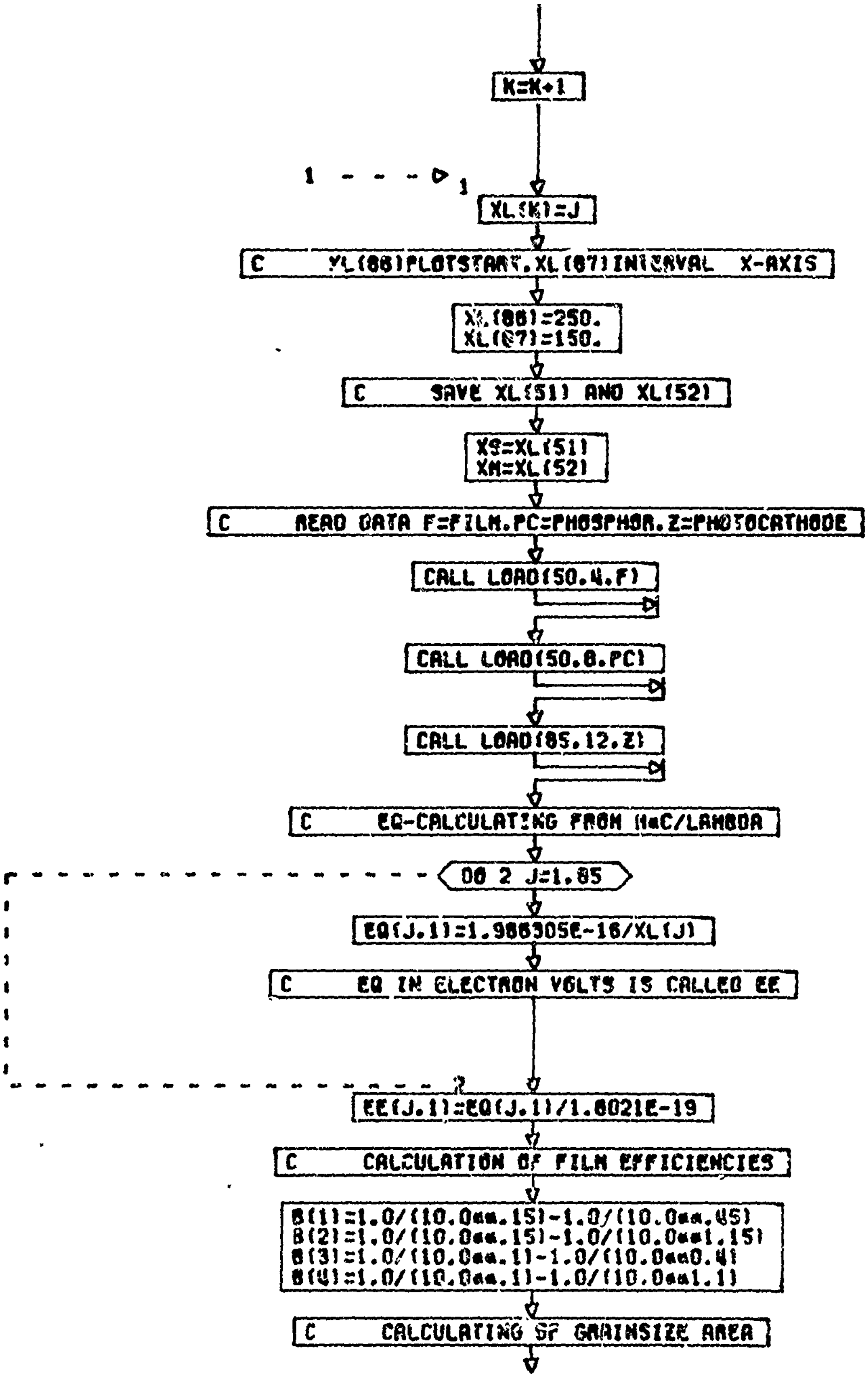
DSQ=2.2
K=0

C     WAVELENGTHADJUSTMENT

DO 1 J=250.1090.10  - - - > 2
```

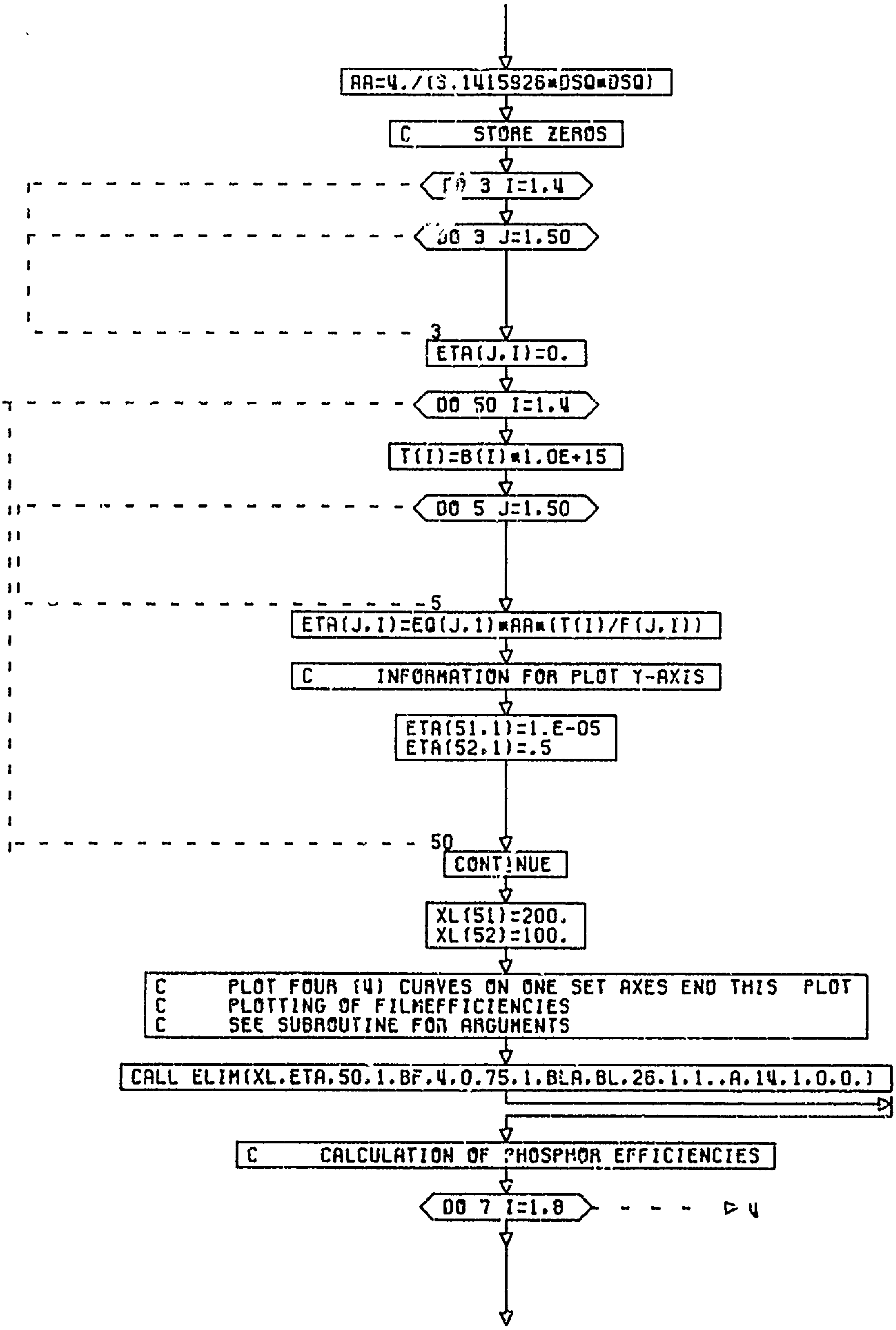
E-1

CONT. ON PG 2

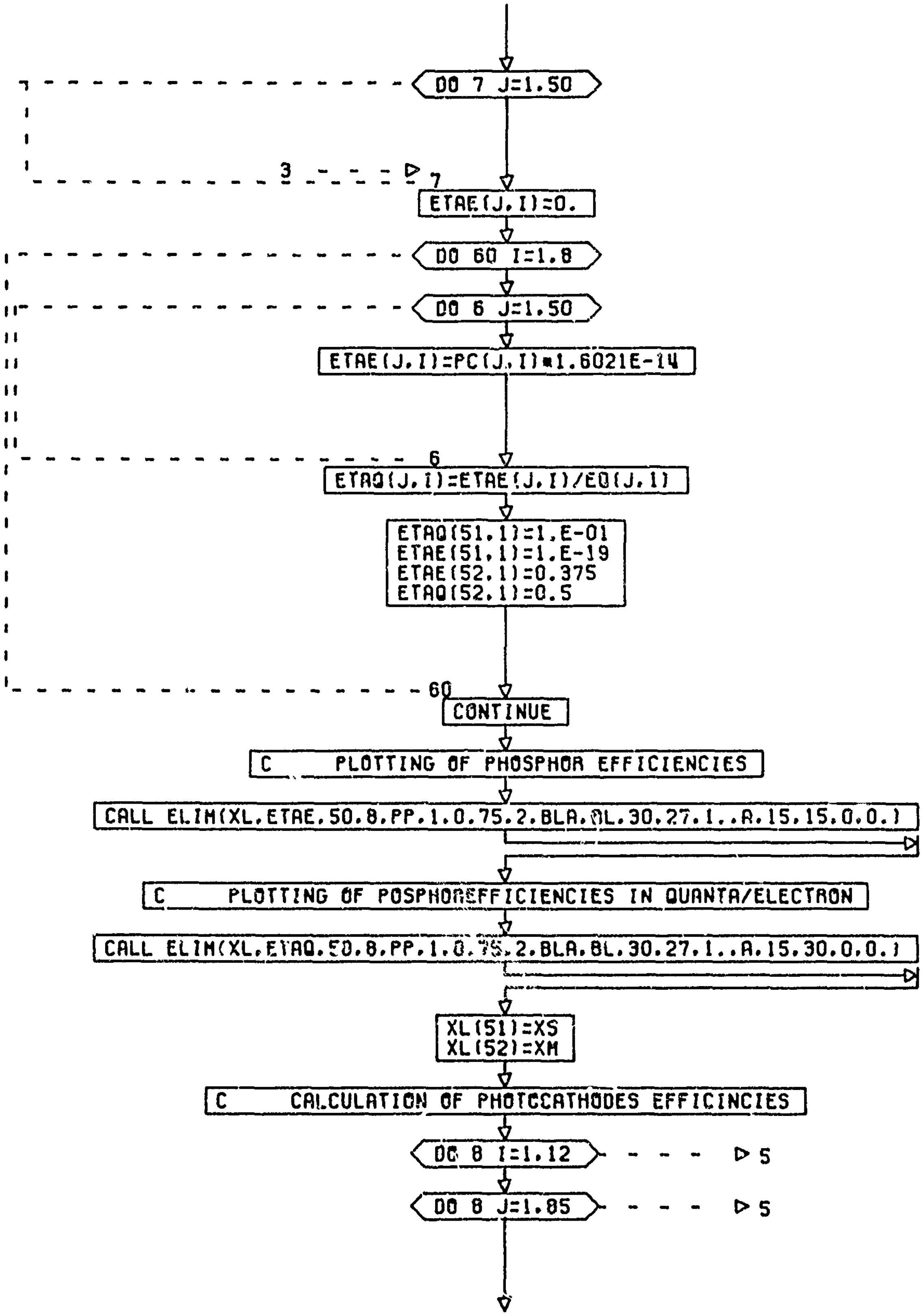


K=K+1
1
1
XL(K)=J
C XL(88)PLOTSTART.XL(87)INTERVAL X-AXIS
XL(88)=250.
XL(87)=150.
C SAVE XL(51) AND XL(52)
XS=XL(51)
XM=XL(52)
C READ DATA F=FILM.PC=PHOSPHOR.Z=PHOTOCATHODE
CALL LOAD(50.4.F)
CALL LOAD(50.8.PC)
CALL LOAD(85.12.Z)
C EQ-CALCULATING FROM H*C/LAMBDA
DO 2 J=1.85
EQ(J.1)=1.986505E-16/XL(J)
C EQ IN ELECTRON VOLTS IS CALLED EE
2
EE(J.1)=EQ(J.1)/1.6021E-19
C CALCULATION OF FILM EFFICIENCIES
B(1)=1.0/(10.0**.15)-1.0/(10.0**.45)
B(2)=1.0/(10.0**.15)-1.0/(10.0**1.15)
B(3)=1.0/(10.0**.1)-1.0/(10.0**0.4)
B(4)=1.0/(10.0**.1)-1.0/(10.0**1.1)
C CALCULATING OF GRAINSIZE AREA

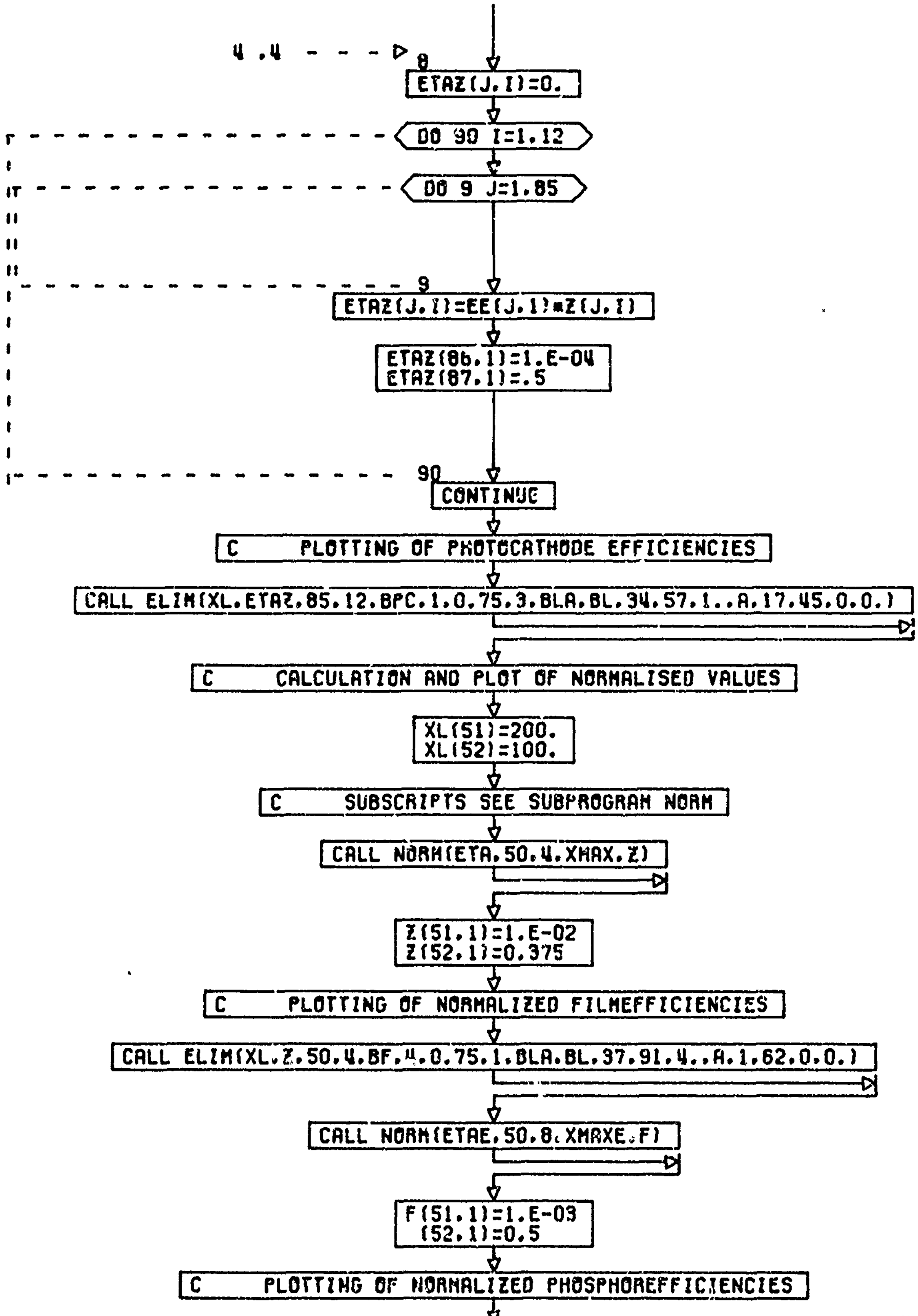
CONT. ON PG 3


AA=4./(3.1415926*DSQ*DSQ)
C STORE ZEROS
DO 3 I=1,4
DO 3 J=1,50
3
ETA(J,I)=0.
DO 50 I=1,4
T(I)=B(I)*1.0E+15
DO 5 J=1,50
5
ETA(J,I)=EQ(J,I)*AA*(T(I)/F(J,I))
C INFORMATION FOR PLOT Y-AXIS
ETA(51,1)=1.E-05
ETA(52,1)=.5
50
CONTINUE
XL(51)=200.
XL(52)=100.
C PLOT FOUR (4) CURVES ON ONE SET AXES END THIS PLOT
C PLOTTING OF FILMEFFICIENCIES
C SEE SUBROUTINE FOR ARGUMENTS
CALL ELIM(XL,ETA,50,1,BF,4,0.75,1,BLA,BL,26,1,1,,A,14,1,0,0,)
C CALCULATION OF PHOSPHOR EFFICIENCIES
DO 7 I=1,8
4

CONT. ON PG 4


DO 7 J=1,50
3
7
ETAE(J,I)=0.
DO 60 I=1,8
DO 6 J=1,50
ETAE(J,I)=PC(J,I)*1.6021E-14
ETAQ(J,I)=ETAE(J,I)/EQ(J,I)
ETAQ(51,I)=1.E-01
ETAE(51,I)=1.E-19
ETAE(52,I)=0.375
ETAQ(52,I)=0.5
CONTINUE
C PLOTTING OF PHOSPHOR EFFICIENCIES
CALL ELIM(XL,ETAE,50,8,PP,1,0.75,2,BLA,BL,30,27,1.,A,15,15,0,0,)
C PLOTTING OF POSPHOREFFICIENCIES IN QUANTA/ELECTRON
CALL ELIM(XL,ETAQ,50,8,PP,1,0.75,2,BLA,BL,30,27,1.,A,15,30,0,0,)
XL(51)=XS
XL(52)=XM
C CALCULATION OF PHOTOCATHODES EFFICINCIES
DO 8 I=1,12
DO 8 J=1,85

CONT. ON PG 5



E-5

CONT. ON PG 6

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CALL ELIM(XL.F.50.8.PP.1.0.75.2.BLA.BL.41.128.4..A.1.62.0.0.)

CALL NORM(ETAQ.50.8.XMAXQ.Z)

Z(51.1)=1.E-03
Z(52.1)=0.5

C      PLOTTING OF NORMALIZED PHOSPHOREFFICIENCIES

CALL ELIM(XL.Z.50.8.PP.1.0.75.2.BLA.BL.41.128.4..A.1.62.0.0.)

XL(51)=XS
XL(52)=XM

CALL NORM(ETAZ.85.12.XMAXZ.Z)

Z(86.1)=1.E-03
Z(87.1)=0.5

C      PLOTTING OF NORMALIZED PHOTOCATHODE EFFICIENCIES

CALL ELIM(XL,Z,85,12,BPC,1.0,75,3,BLA,BL,45,169,4.,A,1,62,12,2,5)

XL(51)=200.
XL(52)=100.

C      CALCULATION OF COMBINATIONS

CALL COMBI(ETAQ.50.8.ETA.50.4.P)

P(51.1)=1.E-04
P(52.1)=0.5

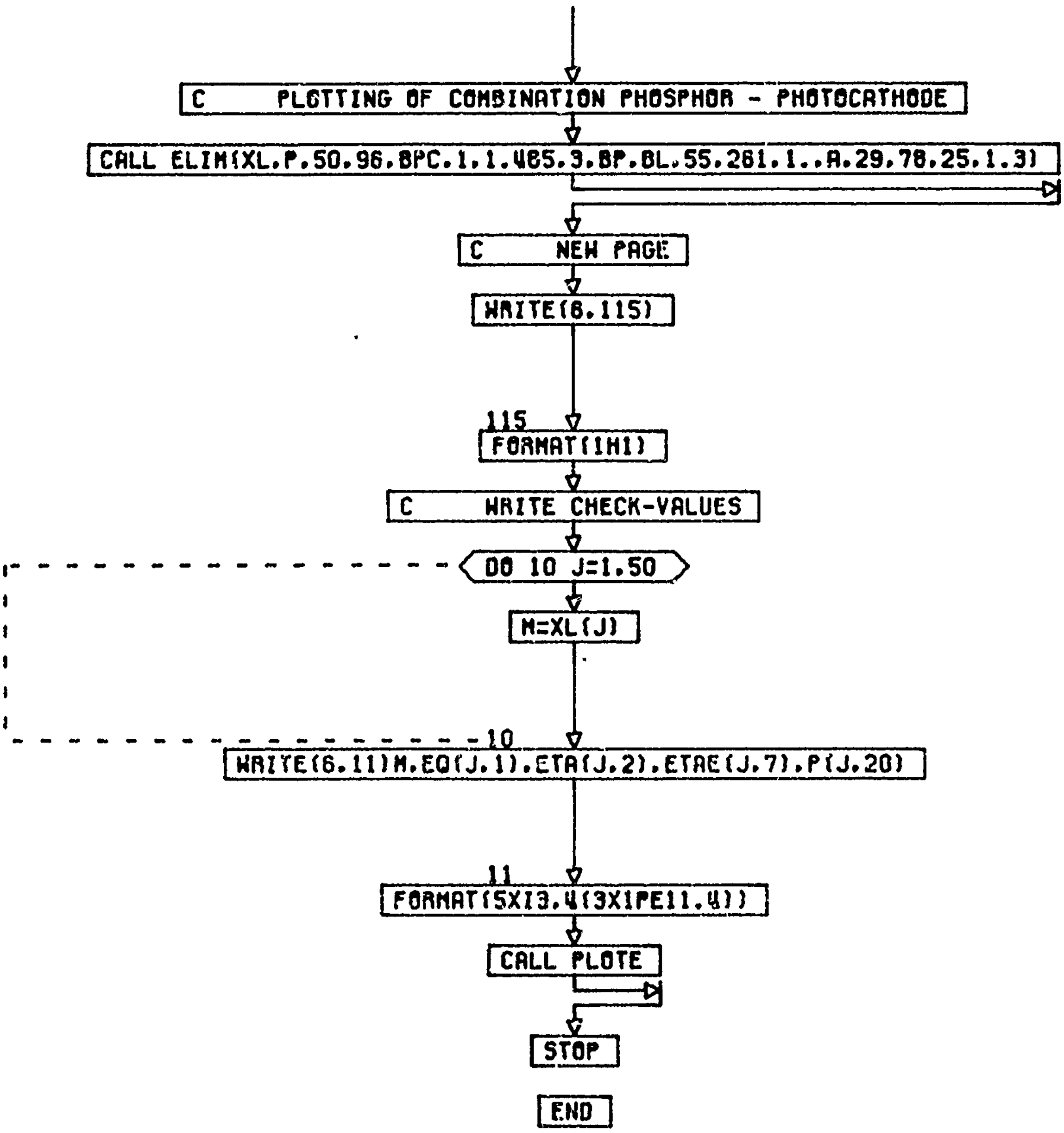
C      PLOTTING OF COMBINATION PHOSPHOR-FILM

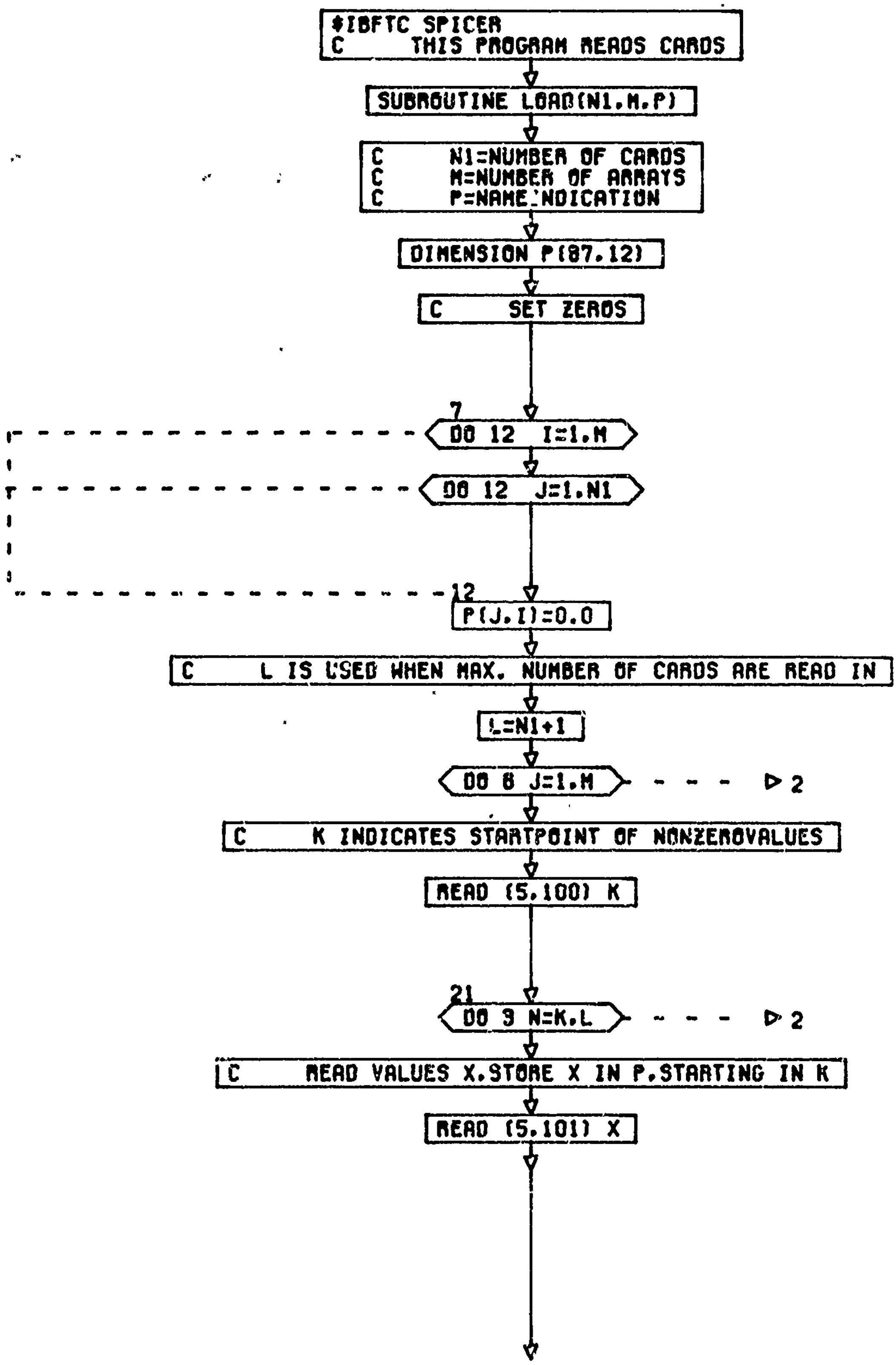
CALL ELIM(XL,P,50,32,BF,4,1.485,1,BP,BL,47,214,1.,A,15,63,12,2,4)

CALL COMBI(ETAQ.50.8.ETAZ.50.12.P)

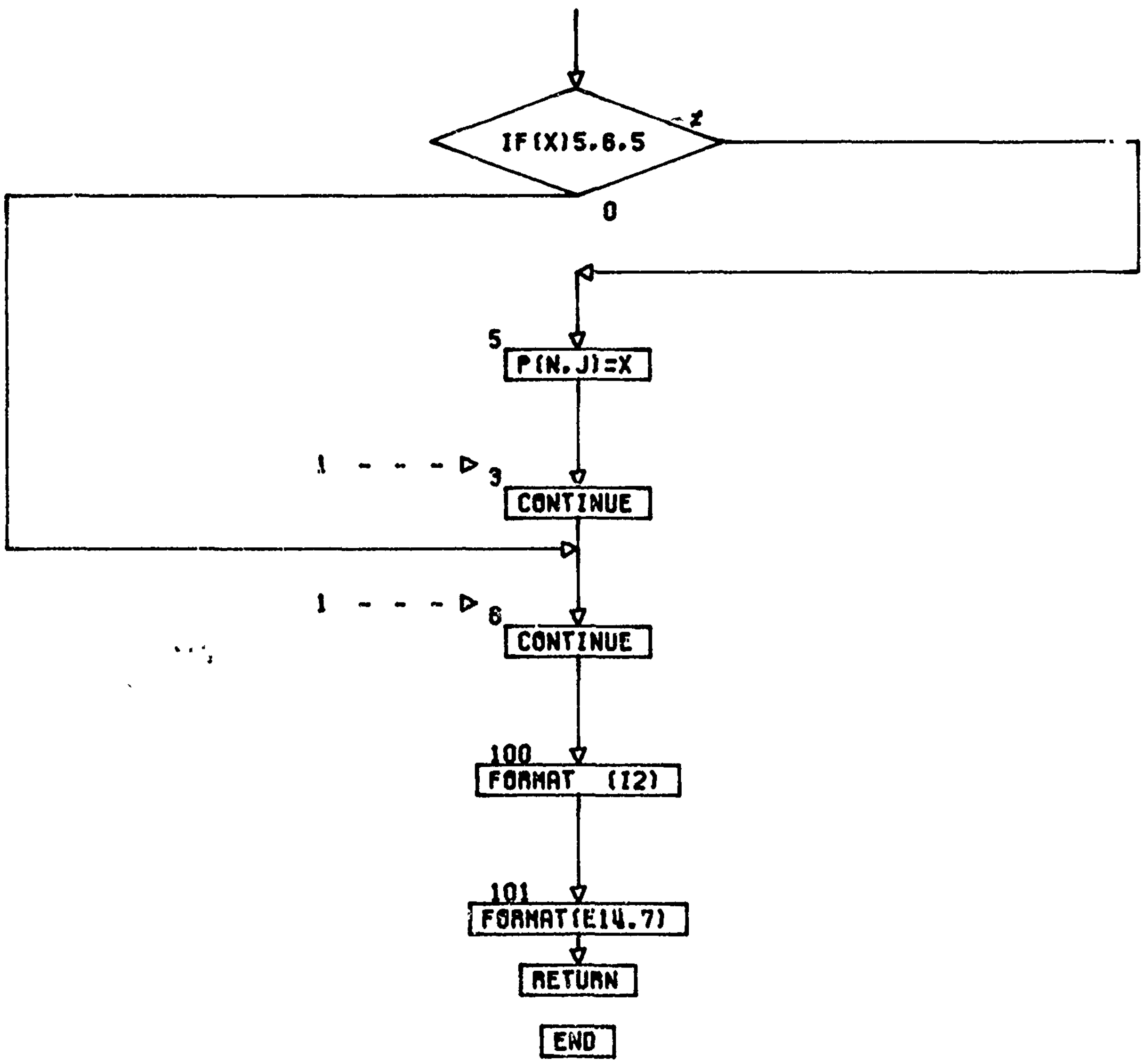
P(51.1)=1.E-04
P(52.1)=0.75
```

CONT. ON PG 7

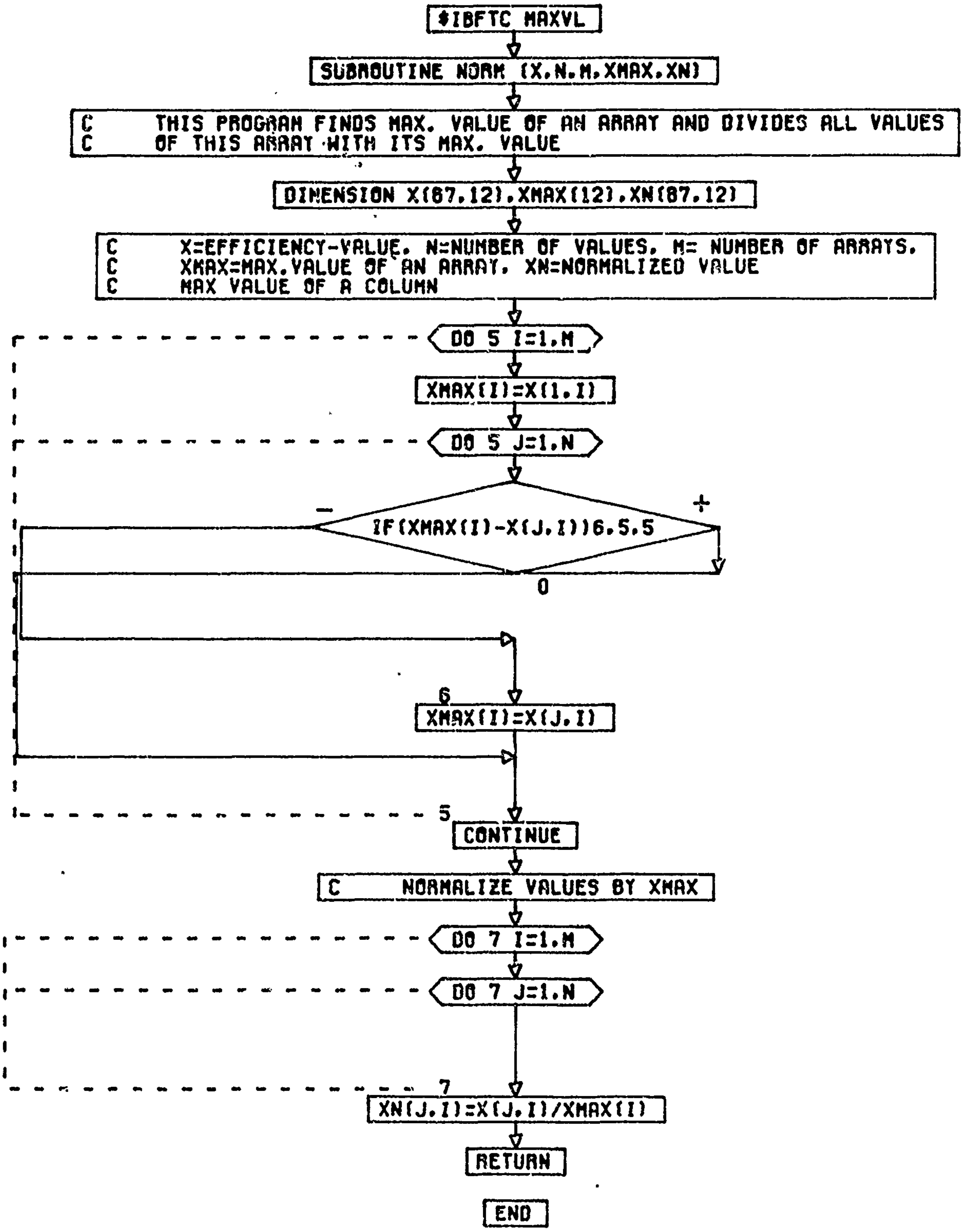

C PLOTTING OF COMBINATION PHOSPHOR - PHOTOCATHODE
CALL ELIM(XL,P,50,96,BPC,1,1,485,3,BP,BL,55,281,1.,A,29,78,25,1,3)
C NEW PAGE
WRITE(6,115)
115
FORMAT(1H1)
C WRITE CHECK-VALUES
DO 10 J=1,50
M=XL(J)
10
WRITE(6,11)M,EQ(J,1),ETA(J,2),ETAE(J,7),P(J,20)
11
FORMAT(5XI3,4(3X1PE11.4))
CALL PLOTE
STOP
END

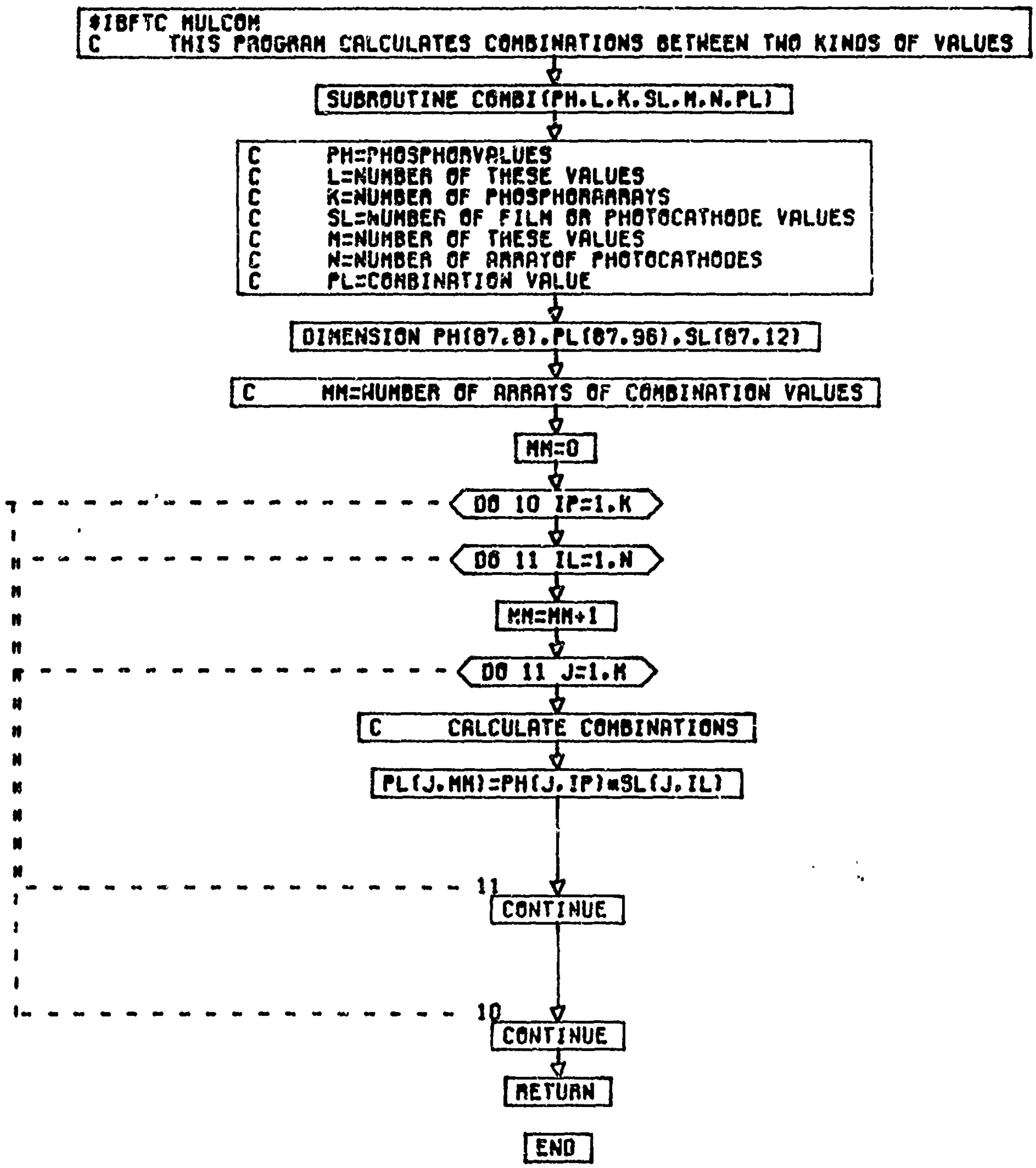

$IBFTC SPICER
C THIS PROGRAM READS CARDS
SUBROUTINE LOAD(N1,M,P)
C N1=NUMBER OF CARDS
C M=NUMBER OF ARRAYS
C P=NAME INDICATION
DIMENSION P(87,12)
C SET ZEROS
7
DO 12 I=1,M
DO 12 J=1,N1
12
P(J,I)=0.0
C L IS USED WHEN MAX. NUMBER OF CARDS ARE READ IN
L=N1+1
DO 8 J=1,M
2
C K INDICATES STARTPOINT OF NONZEROVALUES
READ (5,100) K
21
DO 3 N=K,L
2
C READ VALUES X,STORE X IN P,STARTING IN K
READ (5,101) X

CONT. ON PG 2



IF(X)5,6,5
≠
0
5
P(N,J)=X
1
3
CONTINUE
1
6
CONTINUE
100
FORMAT (I2)
101
FORMAT(E14.7)
RETURN
END


$IBFTC MAXVL
SUBROUTINE NORM (X,N,M,XMAX,XN)
C THIS PROGRAM FINDS MAX. VALUE OF AN ARRAY AND DIVIDES ALL VALUES
C OF THIS ARRAY WITH ITS MAX. VALUE
DIMENSION X(87,12),XMAX(12),XN(87,12)
C X=EFFICIENCY-VALUE, N=NUMBER OF VALUES, M= NUMBER OF ARRAYS.
C XMAX=MAX.VALUE OF AN ARRAY, XN=NORMALIZED VALUE
C MAX VALUE OF A COLUMN
DO 5 I=1,M
XMAX(I)=X(1,I)
DO 5 J=1,N
IF(XMAX(I)-X(J,I))6,5,5
−
+
0
6
XMAX(I)=X(J,I)
5
CONTINUE
C NORMALIZE VALUES BY XMAX
DO 7 I=1,M
DO 7 J=1,N
7
XN(J,I)=X(J,I)/XMAX(I)
RETURN
END



$IBFTC MULCOM
C THIS PROGRAM CALCULATES COMBINATIONS BETWEEN TWO KINDS OF VALUES
SUBROUTINE COMBI(PH,L,K,SL,M,N,PL)
C PH=PHOSPHORVALUES
C L=NUMBER OF THESE VALUES
C K=NUMBER OF PHOSPHORARRAYS
C SL=NUMBER OF FILM OR PHOTOCATHODE VALUES
C M=NUMBER OF THESE VALUES
C N=NUMBER OF ARRAYOF PHOTOCATHODES
C PL=COMBINATION VALUE
DIMENSION PH(87,8),PL(87,96),SL(87,12)
C MM=NUMBER OF ARRAYS OF COMBINATION VALUES
MM=0
DO 10 IP=1,K
DO 11 IL=1,N
MM=MM+1
DO 11 J=1,M
C CALCULATE COMBINATIONS
PL(J,MM)=PH(J,IP)*SL(J,IL)
11
CONTINUE
10
CONTINUE
RETURN
END

```
$IBFTC ELIMIN
C      THIS PROGRAM DOES THE MAINPLOTTING. VALUES TO BE PLOTTED ARE
C      PREPARED. ZEROVALUES ARE ELIMINATED.

SUBROUTINE ELIM(XL,ETA,M,L,ORT1,NB,XMO,KS,ORTO,H,NH,NHS,AB,W,NY,NS
Y,ITP,PITP)

C      XL=WAVELENGTH.VALUE FOR X-AXIS
C      ETA= EFFICIENCY VALUE FOR Y-AXIS
C      M=VALUES OF ONE ARRAY
C      L=INDICATION OF NUMBER OF ARRAYS
C      ORT1=LABELING OF FILMNAMES
C      NB=INDICATION FOR NUMBER OF LETTERS
C      XMO PLOTSTART FOR ORT1
C      KS=REPEATRATE

C      ORTO=BLANKS OR PHOSPHORNAMES
C      H=HEADLINE
C      NH=NUMBER OF HEADLINELETTERS
C      NHS=STARTLETTER IN HEADLINESTATEMENT
C      AB=ARROWHEAD START
C      W=DATADIMENSION  FOR MPLOT
C      NY=NUMBER OF LETTERS FOR W
C      NSY=STARTLETTER IN W-STATEMENT

C      ITP=INDICATION IF OR IF NOT TWO HEADING LINES
C      PITP=STARTPOINT FOR SECOND HEADING LINE

DIMENSION XL(87),ETA(87,98),Y(87),X(87),ORT2(12),ORTO(8),H(53),W(1
8),ORT3(1),ORT1(18),PH(10)

C      KP=INDICATOR FOR NUMBER OF FILMARRAYS

KP=0

C      N=STARTPOINT FOR ORTO

N=1

C      NL=NUMBER OF LETTERS OF ORT1

NL=NB*6

DO 4 IB=1,L,4  - - - > 5

IE=IB+3

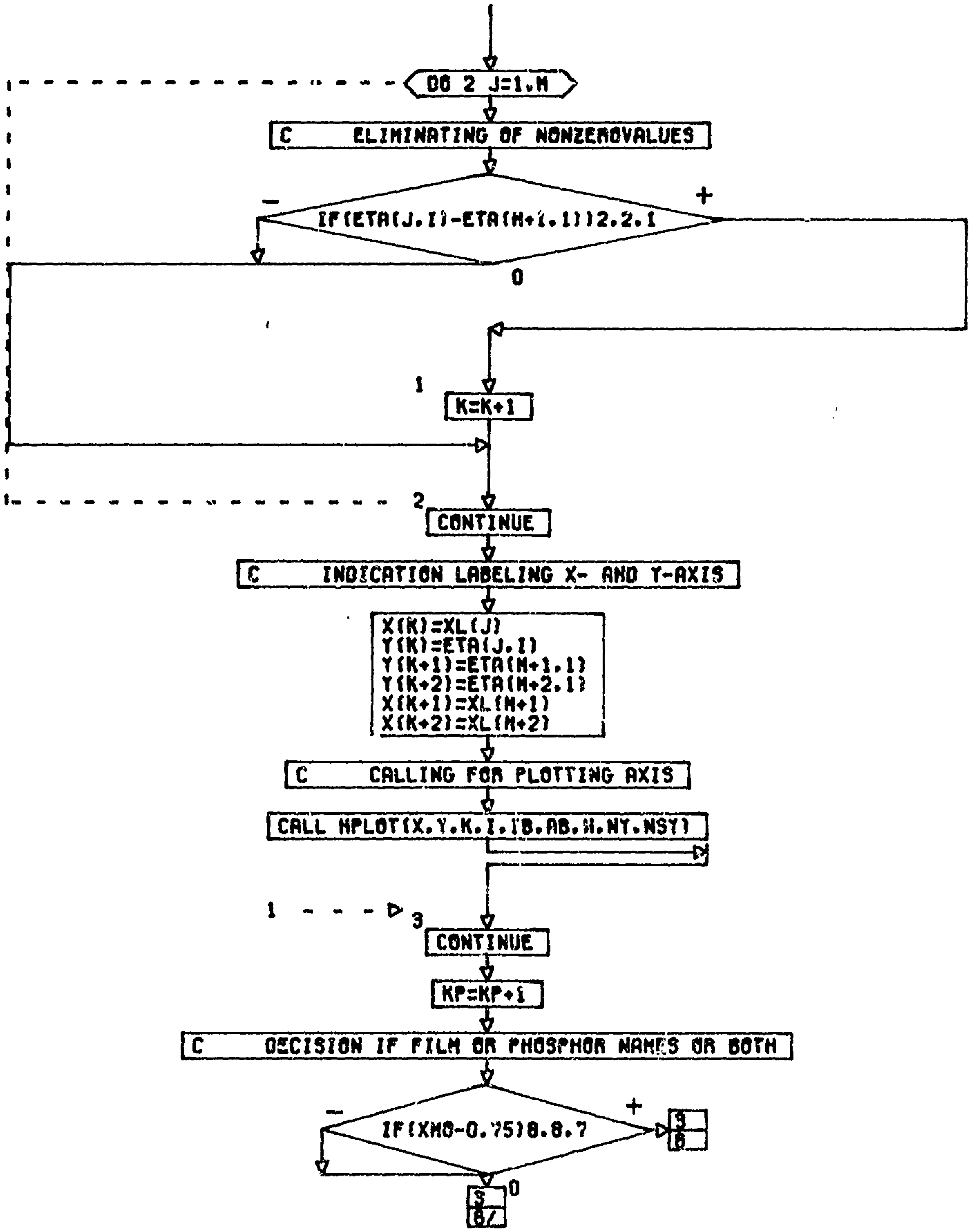
DO 3 I=IB,IE  - - - > 2

C      K=INDICATES NUMBER OF NONZEROVALUES

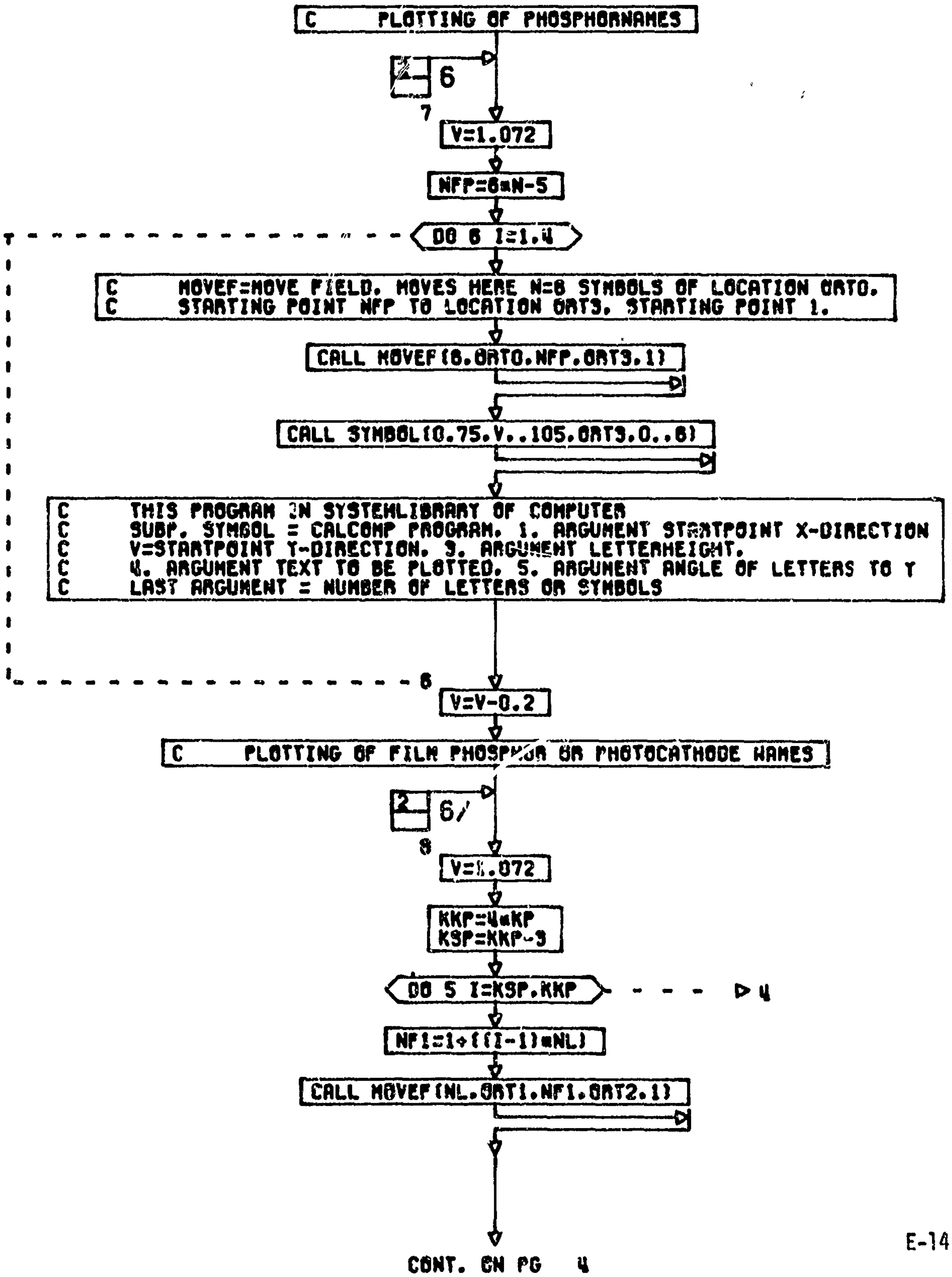
K=0
```

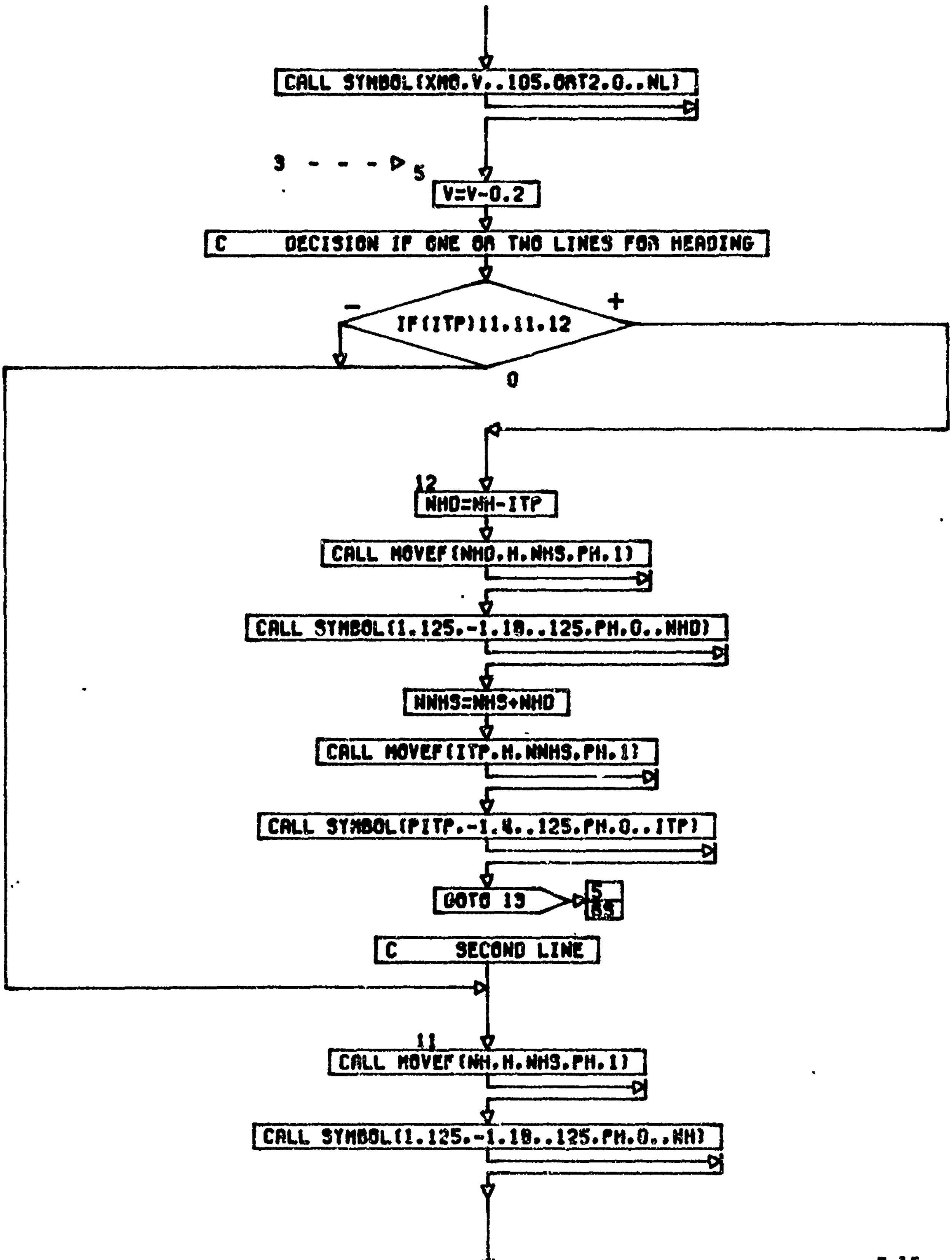
E-12

CONT. ON PG 2

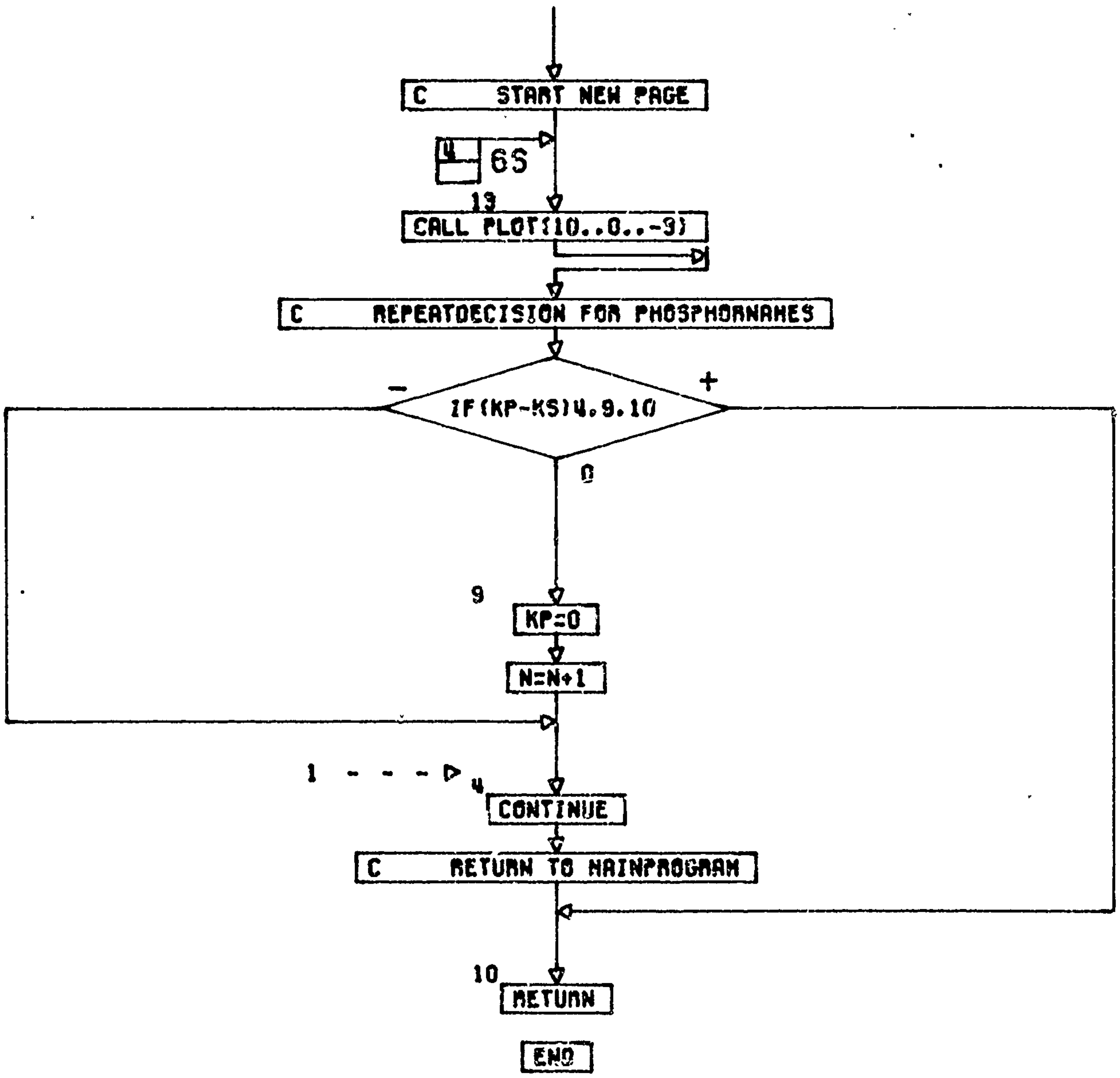

DO 2 J=1,M
C ELIMINATING OF NONZEROVALUES
IF(ETA(J,I)-ETA(M+1,1))2,2,1
−
+
0
1
K=K+1
2
CONTINUE
C INDICATION LABELING X- AND Y-AXIS
X(K)=XL(J)
Y(K)=ETA(J,I)
Y(K+1)=ETA(M+1,1)
Y(K+2)=ETA(M+2,1)
X(K+1)=XL(M+1)
X(K+2)=XL(M+2)
C CALLING FOR PLOTTING AXIS
CALL HPLOT(X,Y,K,I,IB,AB,H,NY,NSY)
1
3
CONTINUE
KP=KP+1
C DECISION IF FILM OR PHOSPHOR NAMES OR BOTH
IF(XMO-0.75)8,8,7
−
+
0
5
8
5
8/

CONT. ON PG 3

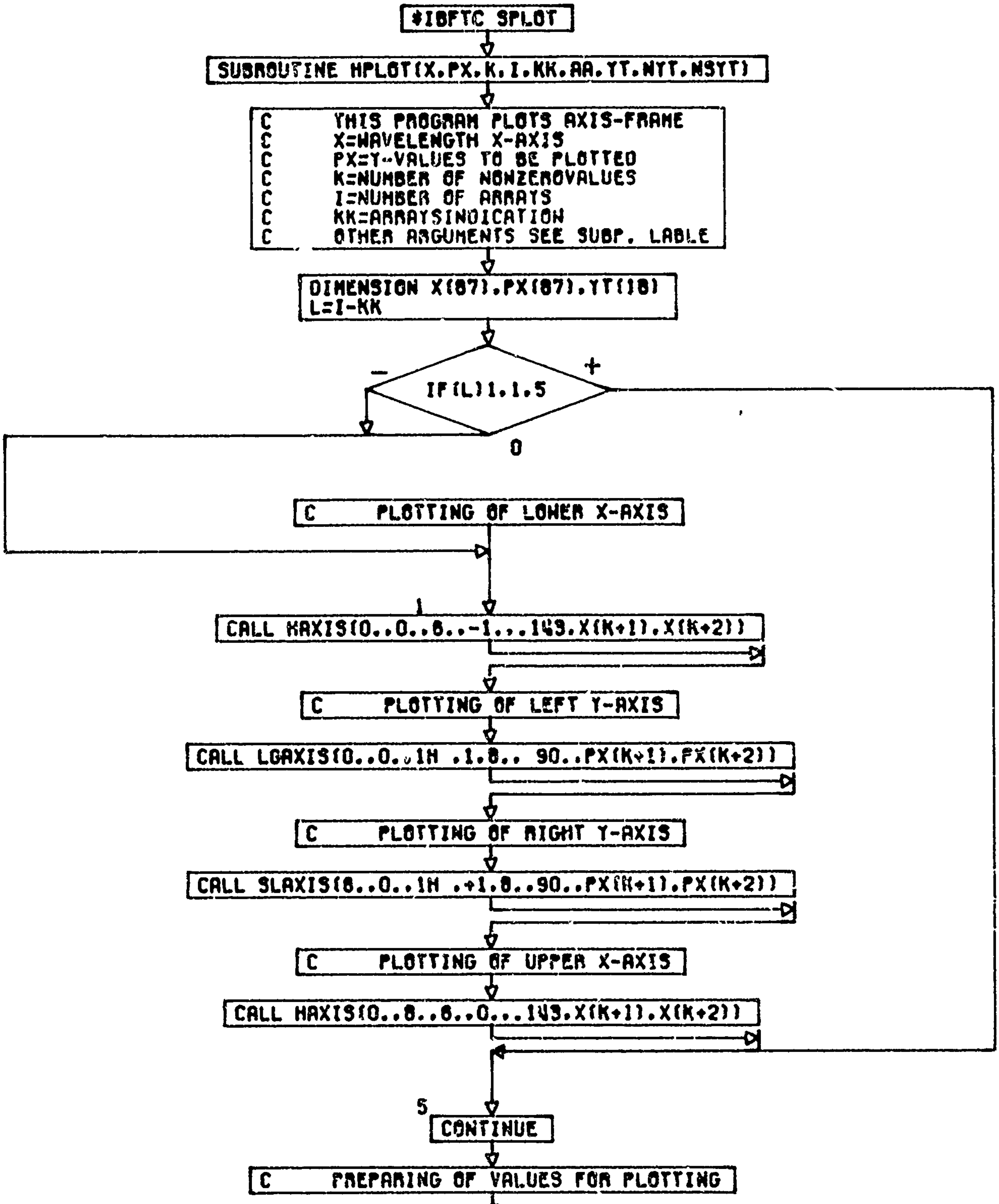

C PLOTTING OF PHOSPHORNAMES
6
7
V=1.072
NFP=6*N-5
DO 6 I=1.4
C MOVEF=MOVE FIELD. MOVES HERE N=6 SYMBOLS OF LOCATION ORTO.
C STARTING POINT NFP TO LOCATION ORTS. STARTING POINT 1.
CALL MOVEF(6.ORTO.NFP.ORTS.1)
CALL SYMBOL(0.75.V..105.ORTS.0..6)
C THIS PROGRAM IN SYSTEMLIBRARY OF COMPUTER
C SUBP. SYMBOL = CALCOMP PROGRAM. 1. ARGUMENT STARTPOINT X-DIRECTION
C V=STARTPOINT Y-DIRECTION. 3. ARGUMENT LETTERHEIGHT.
C 4. ARGUMENT TEXT TO BE PLOTTED. 5. ARGUMENT ANGLE OF LETTERS TO Y
C LAST ARGUMENT = NUMBER OF LETTERS OR SYMBOLS
6
V=V-0.2
C PLOTTING OF FILM PHOSPHOR OR PHOTOCATHODE NAMES
2
6/
8
V=1.072
KKP=4*KP
KSP=KKP-3
DO 5 I=KSP.KKP
4
NF1=1+((I-1)*NL)
CALL MOVEF(NL.ORT1.NF1.ORT2.1)
CONT. ON PG 4


CALL SYMBOL(XNB.V..105.ORT2.0..NL)
3 - - - ▷ 5
V=V-0.2
C DECISION IF ONE OR TWO LINES FOR HEADING
IF(ITP)11.11.12
-
+
0
12
NHO=NH-ITP
CALL MOVEF(NHO.H.NHS.PH.1)
CALL SYMBOL(1.125.-1.18..125.PH.0..NHO)
NNHS=NHS+NHO
CALL MOVEF(ITP.H.NNHS.PH.1)
CALL SYMBOL(PITP.-1.4..125.PH.0..ITP)
GOTO 13
5
B5
C SECOND LINE
11
CALL MOVEF(NH.H.NHS.PH.1)
CALL SYMBOL(1.125.-1.18..125.PH.0..NH)

CONT. ON PG 5

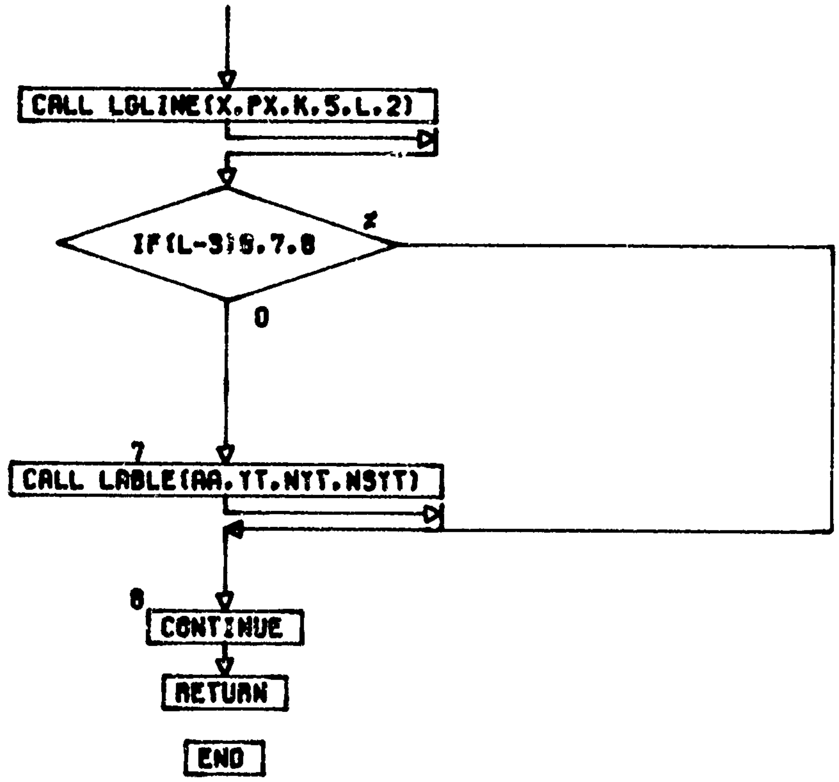

C START NEW PAGE
4 65
13
CALL PLOT(10.,0.,-3)
C REPEATDECISION FOR PHOSPHORNAMES
IF(KP-KS)4,9,10
-
+
0
9
KP=0
N=N+1
1
4
CONTINUE
C RETURN TO MAINPROGRAM
10
RETURN
END

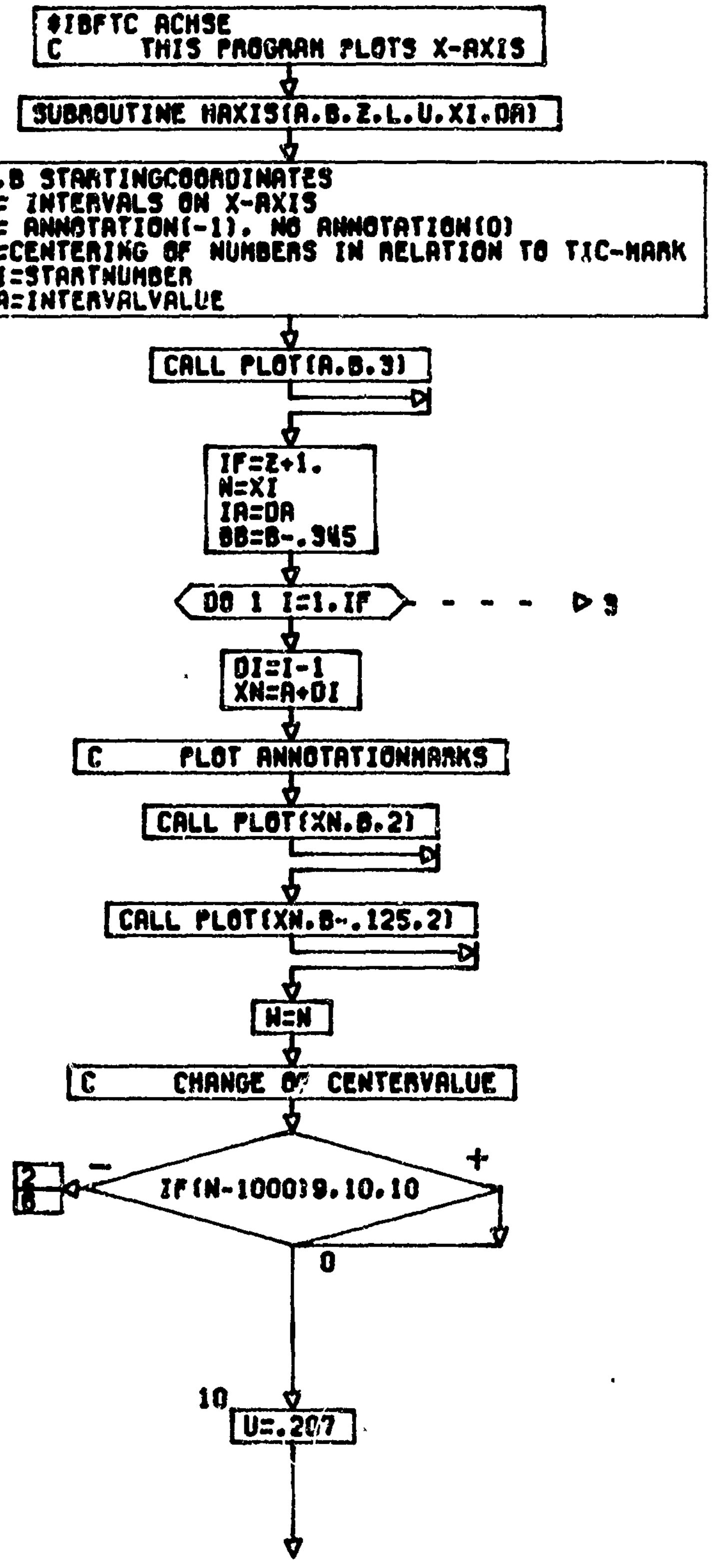
PG 5 FINAL



$IBFTC SPLOT
SUBROUTINE HPLOT(X,PX,K,I,KK,AA,YT,NYT,NSYT)
C THIS PROGRAM PLOTS AXIS-FRAME
C X=WAVELENGTH X-AXIS
C PX=Y-VALUES TO BE PLOTTED
C K=NUMBER OF NONZEROVALUES
C I=NUMBER OF ARRAYS
C KK=ARRAYSINDICATION
C OTHER ARGUMENTS SEE SUBP. LABLE
DIMENSION X(87),PX(87),YT(18)
L=I-KK
−
+
IF(L)1,1,5
0
C PLOTTING OF LOWER X-AXIS
1
CALL HAXIS(0.,0.,6.,-1.,.143,X(K+1),X(K+2))
C PLOTTING OF LEFT Y-AXIS
CALL LGAXIS(0.,0.,1H ,1,8., 90.,PX(K+1),PX(K+2))
C PLOTTING OF RIGHT Y-AXIS
CALL SLAXIS(6.,0.,1H ,+1,8.,90.,PX(K+1),PX(K+2))
C PLOTTING OF UPPER X-AXIS
CALL HAXIS(0.,8.,6.,0.,.143,X(K+1),X(K+2))
5
CONTINUE
C PREPARING OF VALUES FOR PLOTTING

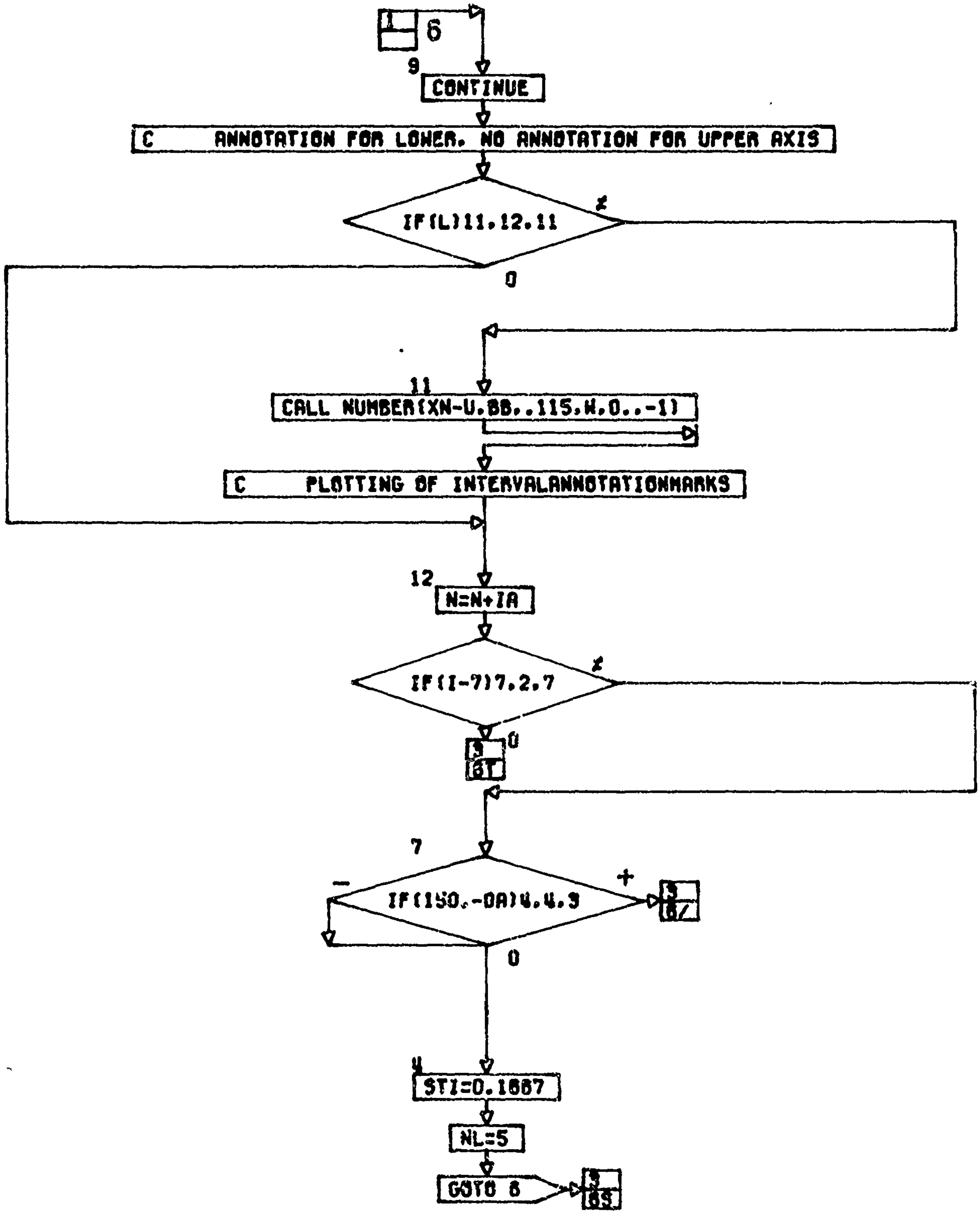
CONT. ON PG 2


CALL LGLINE(X,PX,K,5,L,2)
IF(L-3)8,7,8
≠
0
7
CALL LABLE(AA,YT,NYT,NSYT)
8
CONTINUE
RETURN
END



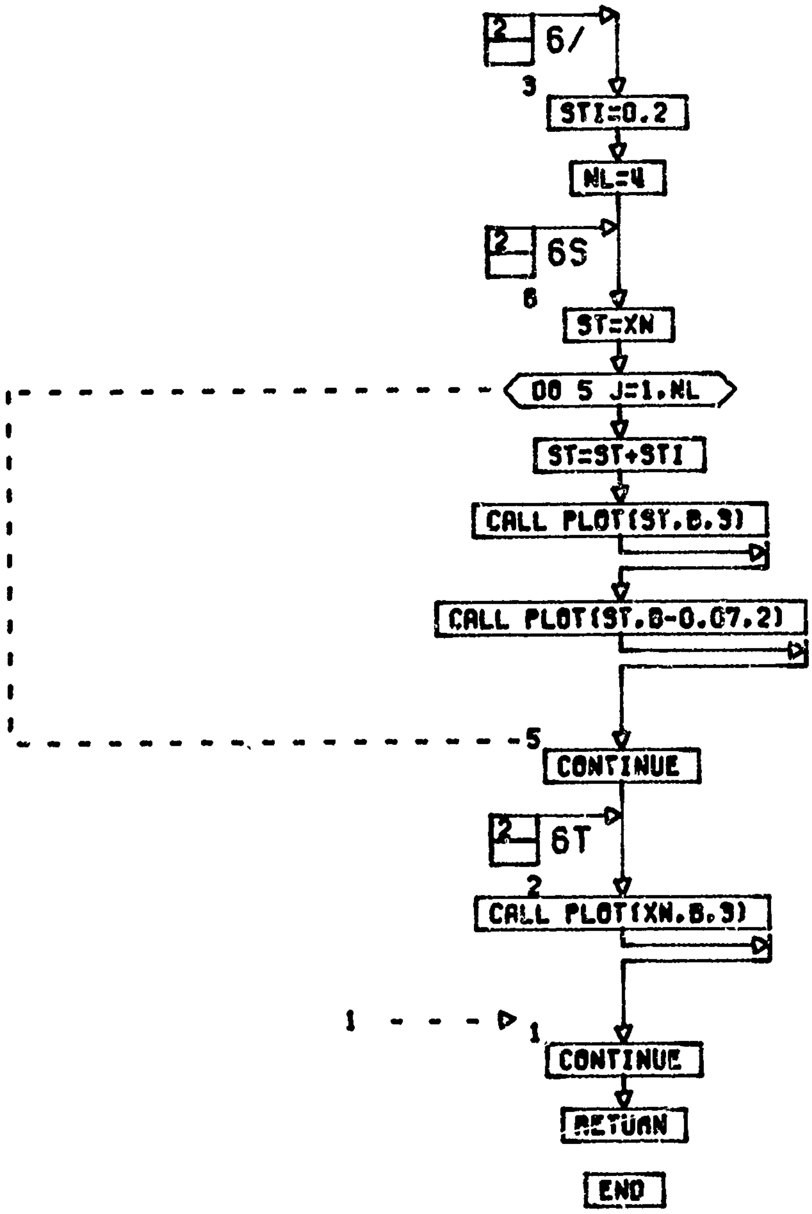
$IBFTC ACHSE
C THIS PROGRAM PLOTS X-AXIS
SUBROUTINE HAXIS(A.B.Z.L.U.XI.DA)
C A.B STARTINGCOORDINATES
C Z= INTERVALS ON X-AXIS
C L= ANNOTATION(-1). NO ANNOTATION(O)
C U=CENTERING OF NUMBERS IN RELATION TO TIC-MARK
C XI=STARTNUMBER
C DA=INTERVALVALUE
CALL PLOT(A.B.3)
IF=Z+1.
N=XI
IA=DA
BB=B-.345
DO 1 I=1.IF
9
DI=I-1
XN=A+DI
C PLOT ANNOTATIONMARKS
CALL PLOT(XN.B.2)
CALL PLOT(XN.B-.125.2)
N=N
C CHANGE OF CENTERVALUE
IF(N-1000)9.10.10
−
+
0
2
6
10
U=.207

CONT. ON PG 2



E-20

CONT. ON PG 3


2
6/
3
STI=0.2
NL=4
2
6S
6
ST=XN
DO 5 J=1,NL
ST=ST+STI
CALL PLOT(ST,B,3)
CALL PLOT(ST,B-0.07,2)
5
CONTINUE
2
6T
2
CALL PLOT(XN,B,3)
1
1
CONTINUE
RETURN
END

```
$IBFTC PFEIL
C      THIS PROGRAM PLOTS SMALL NM, LAMBDA , ARROWHEADS, AUTHORS AND
C      INDICATION OF CURVES

SUBROUTINE LABLE(AS,Y,NY,NSY)

C      AS= ARROWHEAD START
C      Y=Y-AXIS DIMENSIONS
C      NY=NUMBER OF LETTERS OF DIMENSIONS
C      NSY=STARTLETTER OF DIMENSIONS

DIMENSION Y(18),PY(5)

C      PLOT ARROWHEAD X-AXIS

CALL PLOT(2.,-0.6,3)

CALL PLOT(2.75,-0.6,2)

CALL AROHD(3.25,-0.6,4.75,-.6,0.2,0.08,16)

C      PLOT SMALL N

XN=5.0

C      XN AND YN STARTPOINT FOR SMALL N

YN=-0.55
BN=YN+0.075

C      PLOT BRACKETS

CALL PLOT(XN-0.02,BN,3)

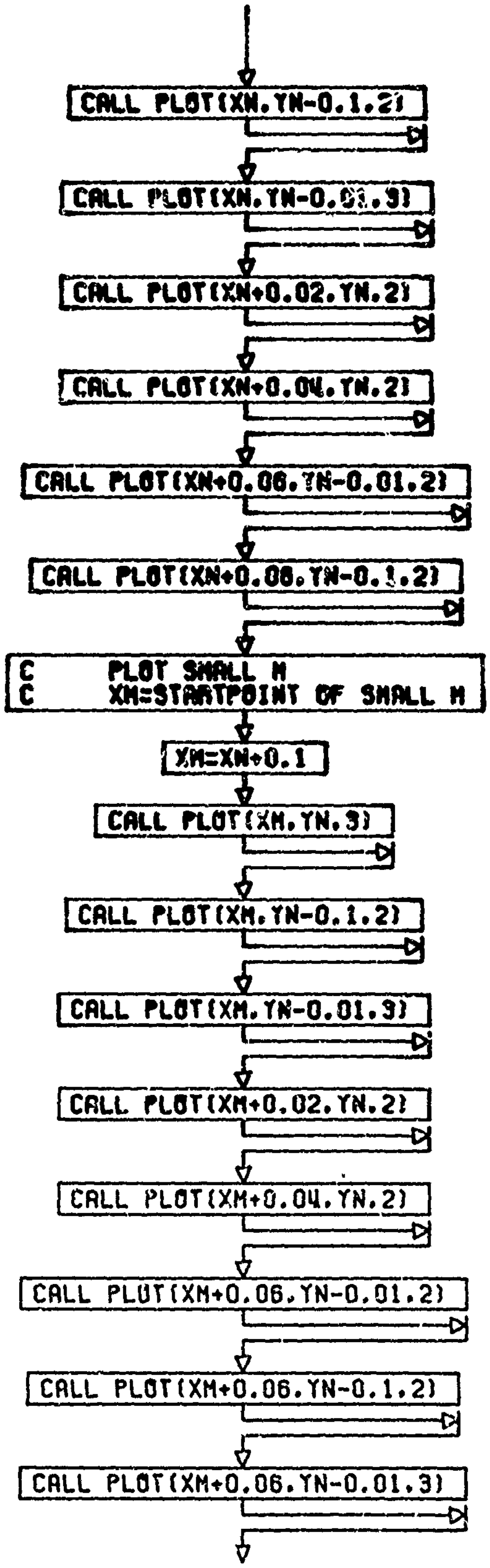
CALL PLOT(XN-0.05,BN,2)

CALL PLOT(XN-0.05,BN-0.2,2)

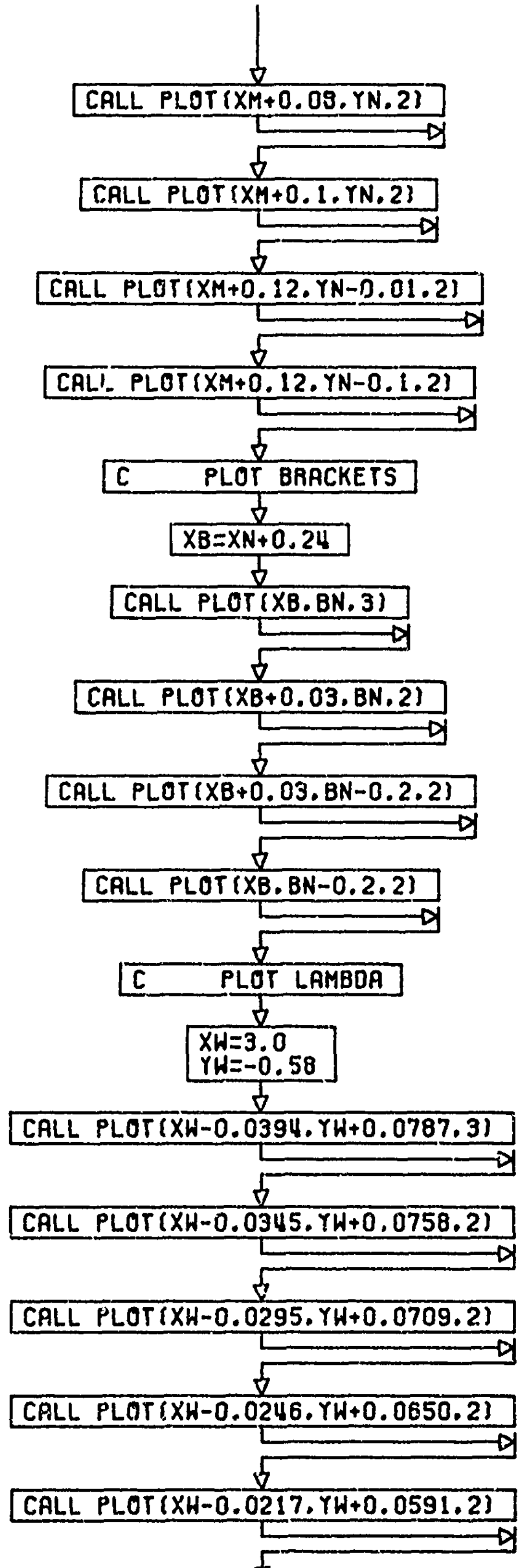
CALL PLOT(XN-0.02,BN-0.2,2)

CALL PLOT(XN,YN,3)
```

CONT. ON PG 2

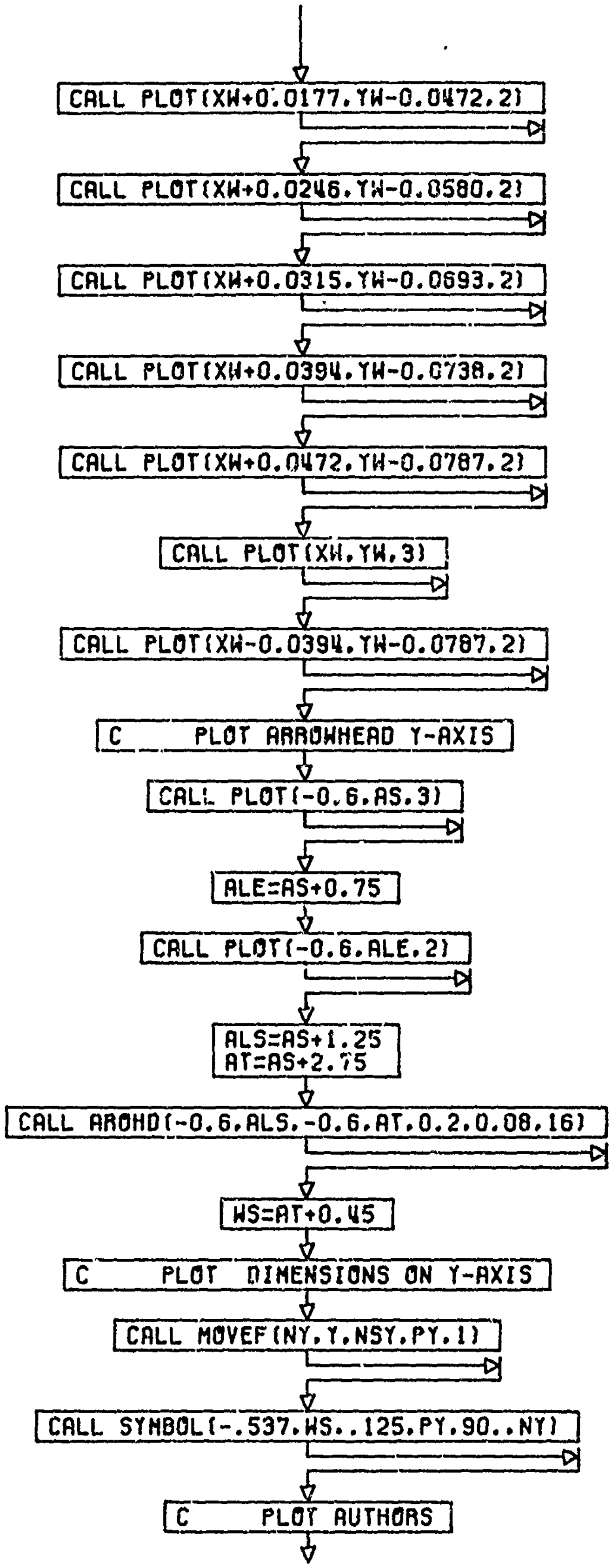

CALL PLOT(XN,YN-0.1,2)
CALL PLOT(XN,YN-0.01,3)
CALL PLOT(XN+0.02,YN,2)
CALL PLOT(XN+0.04,YN,2)
CALL PLOT(XN+0.06,YN-0.01,2)
CALL PLOT(XN+0.06,YN-0.1,2)
C PLOT SMALL M
C XM=STARTPOINT OF SMALL M
XM=XN+0.1
CALL PLOT(XM,YN,3)
CALL PLOT(XM,YN-0.1,2)
CALL PLOT(XM,YN-0.01,3)
CALL PLOT(XM+0.02,YN,2)
CALL PLOT(XM+0.04,YN,2)
CALL PLOT(XM+0.06,YN-0.01,2)
CALL PLOT(XM+0.06,YN-0.1,2)
CALL PLOT(XM+0.06,YN-0.01,3)

CONT. ON PG 3

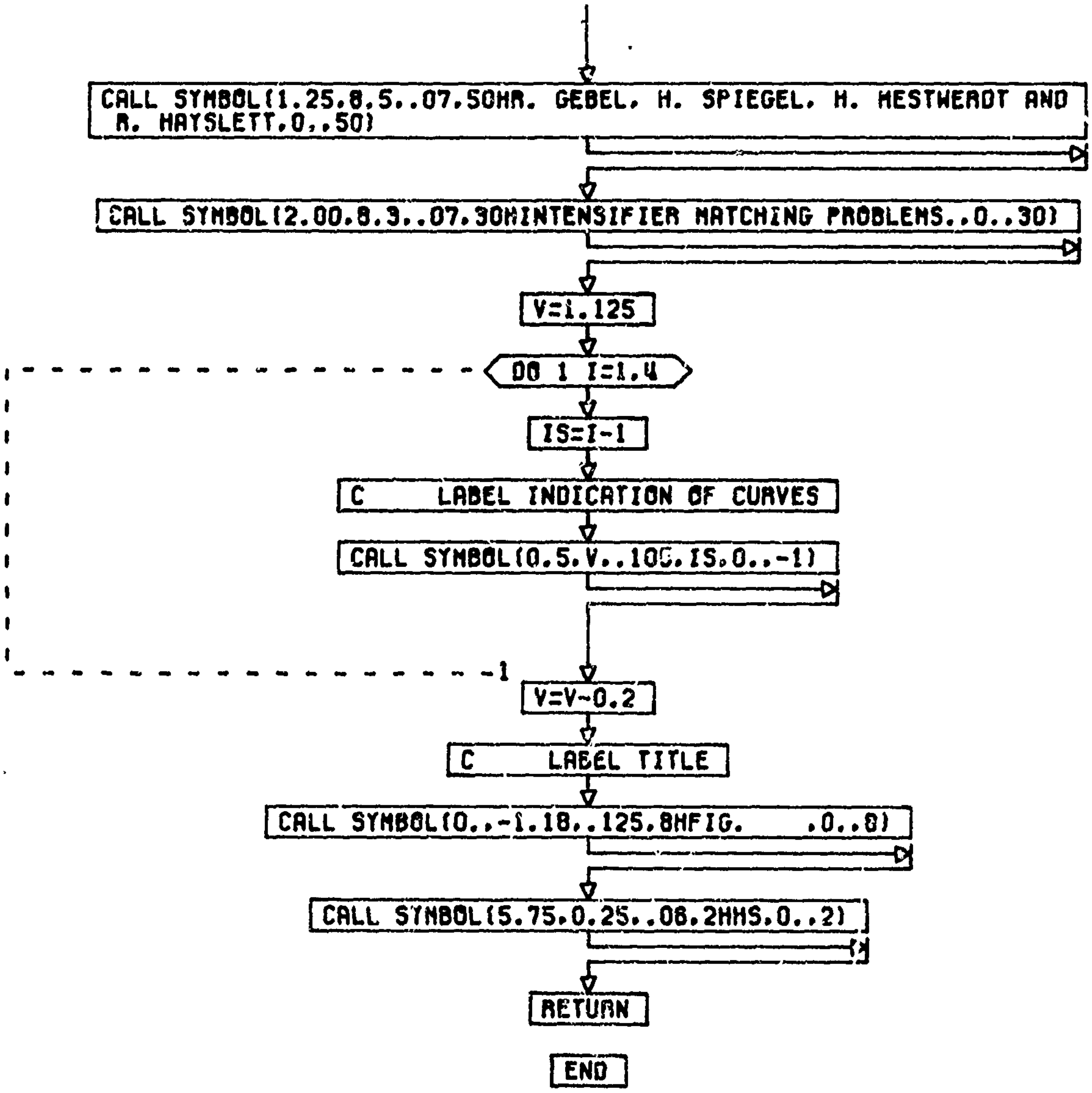


CALL PLOT(XM+0.08,YN,2)
CALL PLOT(XM+0.1,YN,2)
CALL PLOT(XM+0.12,YN-0.01,2)
CALL PLOT(XM+0.12,YN-0.1,2)
C PLOT BRACKETS
XB=XN+0.24
CALL PLOT(XB,BN,3)
CALL PLOT(XB+0.03,BN,2)
CALL PLOT(XB+0.03,BN-0.2,2)
CALL PLOT(XB,BN-0.2,2)
C PLOT LAMBDA
XW=3.0
YW=-0.58
CALL PLOT(XW-0.0394,YW+0.0787,3)
CALL PLOT(XW-0.0345,YW+0.0758,2)
CALL PLOT(XW-0.0295,YW+0.0709,2)
CALL PLOT(XW-0.0246,YW+0.0650,2)
CALL PLOT(XW-0.0217,YW+0.0591,2)

CONT. ON PG 4


CALL PLOT(XW+0.0177,YW-0.0472,2)
CALL PLOT(XW+0.0246,YW-0.0580,2)
CALL PLOT(XW+0.0315,YW-0.0693,2)
CALL PLOT(XW+0.0394,YW-0.0738,2)
CALL PLOT(XW+0.0472,YW-0.0787,2)
CALL PLOT(XW,YW,3)
CALL PLOT(XW-0.0394,YW-0.0787,2)
C PLOT ARROWHEAD Y-AXIS
CALL PLOT(-0.6,AS,3)
ALE=AS+0.75
CALL PLOT(-0.6,ALE,2)
ALS=AS+1.25
AT=AS+2.75
CALL AROHD(-0.6,ALS,-0.6,AT,0.2,0.08,16)
WS=AT+0.45
C PLOT DIMENSIONS ON Y-AXIS
CALL MOVEF(NY,Y,NSY,PY,1)
CALL SYMBOL(-.537,WS,.125,PY,90.,NY)
C PLOT AUTHORS

CONT. ON PG 5


CALL SYMBOL(1.25,8.5,.07,50HR. GEBEL, H. SPIEGEL, H. WESTWERDT AND R. HAYSLETT,0.,50)
CALL SYMBOL(2.00,8.3,.07,30HINTENSIFIER MATCHING PROBLEMS,0.,30)
V=1.125
DO 1 I=1,4
IS=I-1
C LABEL INDICATION OF CURVES
CALL SYMBOL(0.5,V,.105,IS,0.,-1)
1
V=V-0.2
C LABEL TITLE
CALL SYMBOL(0.,-1.18,.125,8HFIG. ,0.,8)
CALL SYMBOL(5.75,0.25,.08,2HHS,0.,2)
RETURN
END